TM 9-4520-258-13&P

TECHNICAL MANUAL

OPERATOR AND FIELD MAINTENANCE MANUAL

INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
FOR

ARMY SPACE HEATER (ASH)
ELECTRIC POWERED, MULTI-FUEL, 120,000 BTU
MODEL H-120
(NSN 4520-01-367-2739)
MODEL H-120-1
(NSN 4520-01-439-1682)

G06452014510

This manual supersedes TM 9-4520-258-14, dated 31 August 1994, and TM 9-4520-258-24P, dated 1 June 2001.

DISTRIBUTION STATEMENT A – Approved for public release, distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 NOVEMBER 2013

WARNING SUMMARY

Warning Summary

The following safety and hazardous materials warnings appear throughout this manual. Review these warnings to ensure that you understand them and can apply them during operation and maintenance of the equipment. Failure to follow these warnings may result in serious injury or death to personnel.

FIRST AID

First aid is the emergency care given to the sick, injured, or wounded before being treated by medical personnel. Refer to FM 4-25.11 for first aid treatment information.

EXPLANATION OF SAFETY WARNING ICONS

ELECTRICAL – Electrical wire to hand with electricity symbol running through hand shows that shock hazard is present.

ELECTRICAL – Electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.

EYE PROTECTION – Person with goggles shows that the material will injure the eyes.

HEAVY OBJECT – Human figure stooping over heavy object shows physical injury potential from improper lifting technique.

HOT AREA – Hand over object radiating heat shows that part is hot and can burn.

SHARP OBJECT – Pointed object in hand shows that a sharp object presents a danger to limb.

WARNING SUMMARY – (Continued)

GENERAL SAFETY WARNINGS DESCRIPTION

WARNING

For first aid instructions, refer to FM 4-25.11,First Aid.

When using compressed air for cooling, cleaning, or drying operation, do not exceed 30 PSI (207 kPa) at the nozzle. Eyes can be permanently damaged by contact with liquid, and large particles or solvent vapor can damage lungs. When using air for cleaning at an air-exhausted workbench, wear approved goggles or face shield. When using air for cleaning at an unexhausted workbench, wear approved respirator and goggles.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Steel banding cut under tension can snap free and cause injury. Leather gloves and face shield are required.

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

WARNING

Contact with hot components can cause burns. Allow the ASH to cool down before attempting service, inspection, or maintenance activity.

WARNING SUMMARY – (Continued)

Heat exchanger overheating may damage the ASH and under some conditions a safety hazard may result. An overheat shutdown occurs when the combustion air and circulating air fan assemblies are turned off at the same time when in the heating modes. Always set the control panel MODE SWITCH to the VENT position for at least 2 minutes when shutting down the ASH from the heating modes.

WARNING

Use care when using the jack assembly or when raising or lowering the wheel assemblies. Fingers or hands may be pinched causing injury to personnel.

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

WARNING

The ASH weighs 355 pounds (161 kg). Mechanical lift is required. For localized movement and positioning, lower wheels and manually move the ASH to desired location by utilizing handrails.

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

The wooden packing crate weighs 100 pounds (45.4 kg). Two people are required to remove wooden cover.

WARNING SUMMARY – (Continued)

EXPLANATION OF HAZARDOUS MATERIALS ICONS

CHEMICAL – Drops of liquid on hand show that the material will cause burns or irritation to human skin or tissue.

CRYOGENIC – Hand in block of ice shows that the material is extremely cold and can injure human skin or tissue.

EYE PROTECTION – Person with goggles shows that the material can injure the eyes.

EXPLOSION – Rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition, or high pressure.

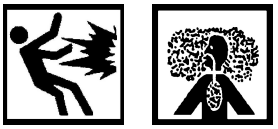
FIRE – Flames shows that a material may ignite and cause burns.

RADIATION – Three circular wedges shows that the material emits radioactive energy and can injure human tissue.

VAPOR – Human figure in a cloud shows that material vapors present a danger to life or health.

HAZARDOUS MATERIALS WARNING DESCRIPTION

WARNING



ACRYLIC LACQUER SEALANT

WARNING SUMMARY – (Continued)

Acrylic lacquer sealant is flammable. Keep away from open flames or other sources of ignition. Avoid breathing fumes from sealant. Good general ventilation is normally adequate. Avoid skin contact with sealant.

WARNING

CLEANING COMPOUND SOLVENT

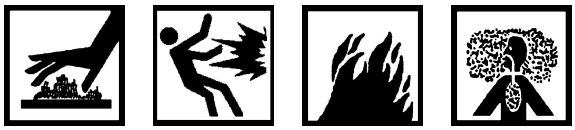
Cleaning compound solvent vapors are toxic. Avoid prolonged or repeated breathing of vapors or solvent contact with skin. Use only with adequate ventilation. Solvent is flammable and should not be used near open flame. Be sure a fire extinguisher is available.

WARNING

COLD METAL

Touching cold metal with exposed skin will cause skin to bond to metal. Gloves are required when touching cold metal objects. Do not touch cold metal parts with bare hands. Frostbite can cause permanent injury.

WARNING



FUEL

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

WARNING

FUEL SOURCE

Fuel is toxic and flammable, it can cause injury to personnel and damage to equipment. Improper positioning of the external fuel source can cause the internal fuel tank to overflow. Properly position external fuel source.

WARNING

WARNING SUMMARY – (Continued)

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC)

If an NBC attack has occurred, do not use Chemical and Biological Protection Kit (CBPK) equipment until all items have been decontaminated. Refer to FM 3-5, NBC Decontamination, for detailed decontamination procedures.

WARNING

SOLDER

Avoid breathing fumes generated by soldering. Eye protection is required. Good general ventilation is normally adequate.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: This manual supersedes TM 9-4520-258-14, dated 31 August 1994, and TM 9-4520-258-24P, dated 1 June 2001. Zero in the “Change No.” column indicates an original page or work package.

Date of issue for revision is:

1 NOVEMBER 2013

THE TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 36 AND THE TOTAL NUMBER OF WORK PACKAGES IN THIS MANUAL IS 118 CONSISTING OF THE FOLLOWING:

Page/WP No.	Change No.	Page/WP No.	Change No.
Front Cover (2)	0	WP 0031 (6)	0
Warning Summary (8)	0	WP 0032 (6)	0
Title Block (2)	0	WP 0033 (4)	0
Table of Contents (12)	0	WP 0034 (2)	0
How to Use This Manual (2)	0	WP 0035 (8)	0
Chapter 1 Title Page (2)	0	WP 0036 (10)	0
WP 0001 (4)	0	WP 0037 (12)	0
WP 0002 (10)	0	WP 0038 (12)	0
WP 0003 (8)	0	WP 0039 (4)	0
Chapter 2 Title Page (2)	0	WP 0040 (6)	0
WP 0004 (4)	0	WP 0041 (6)	0
WP 0005 (14)	0	WP 0042 (4)	0
WP 0006 (2)	0	WP 0043 (4)	0
WP 0007 (2)	0	WP 0044 (4)	0
WP 0008 (8)	0	WP 0045 (4)	0
Chapter 3 Title Page (2)	0	WP 0046 (2)	0
WP 0009 (2)	0	WP 0047 (2)	0
WP 0010 (10)	0	WP 0048 (4)	0
WP 0011 (38)	0	WP 0049 (16)	0
Chapter 4 Title Page (2)	0	WP 0050 (2)	0
WP 0012 (2)	0	WP 0051 (2)	0
WP 0013 (22)	0	WP 0052 (4)	0
WP 0014 (16)	0	WP 0053 (14)	0
Chapter 5 Title Page (2)	0	WP 0054 (6)	0
WP 0015 (10)	0	WP 0055 (2)	0
WP 0016 (2)	0	WP 0056 (18)	0
WP 0017 (2)	0	WP 0057 (6)	0
WP 0018 (2)	0	WP 0058 (6)	0
WP 0019 (2)	0	WP 0059 (6)	0
WP 0020 (6)	0	WP 0060 (4)	0
WP 0021 (4)	0	WP 0061 (2)	0
WP 0022 (2)	0	WP 0062 (10)	0
WP 0023 (2)	0	WP 0063 (10)	0
WP 0024 (16)	0	WP 0064 (2)	0
WP 0025 (2)	0	WP 0065 (8)	0
WP 0026 (2)	0	WP 0066 (10)	0
WP 0027 (6)	0	WP 0067 (18)	0
WP 0028 (4)	0	WP 0068 (18)	0
WP 0029 (4)	0	WP 0069 (8)	0
WP 0030 (2)	0	WP 0070 (6)	0

LIST OF EFFECTIVE PAGES/WORK PACKAGES

WP 0071 (6) 0
WP 0072 (14) 0
WP 0073 (6) 0
WP 0074 (6) 0
WP 0075 (6) 0
WP 0076 (4) 0
WP 0077 (6) 0
WP 0078 (18) 0
WP 0079 (2) 0
WP 0080 (2) 0
WP 0081 (14) 0
WP 0082 (2) 0
WP 0083 (2) 0
WP 0084 (14) 0
WP 0085 (2) 0
WP 0086 (2) 0
WP 0087 (2) 0
WP 0088 (22) 0
WP 0089 (2) 0
WP 0090 (8) 0
WP 0091 (6) 0
WP 0092 (4) 0
WP 0093 (12) 0
Chapter 6 Title Page (2) 0
WP 0094 (6) 0
WP 0095 (26) 0
WP 0096 (16) 0
WP 0097 (12) 0
WP 0098 (10) 0
WP 0099 (6) 0
WP 0100 (16) 0
WP 0101 (6) 0
WP 0102 (4) 0
WP 0103 (4) 0
WP 0104 (4) 0
WP 0105 (6) 0
WP 0106 (6) 0
WP 0107 (12) 0
WP 0108 (2) 0
WP 0109 (6) 0
WP 0110 (8) 0
Chapter 7 Title Page (2) 0
WP 0111 (2) 0
WP 0112 (4) 0
WP 0113 (6) 0
WP 0114 (6) 0
WP 0115 (2) 0
WP 0116 (2) 0
WP 0117 (2) 0
WP 0118 (2) 0
INDEX-1 – INDEX 8 .....

HEADQUARTERS, DEPARTMENT OF THE ARMY
WASHINGTON, DC, 1 NOVEMBER 2013

TECHNICAL MANUAL

OPERATOR AND FIELD MAINTENANCE MANUAL

INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
FOR

ARMY SPACE HEATER (ASH)
ELECTRIC POWERED, MULTI-FUEL, 120,000 BTU
MODEL H-120
(NSN 4520-01-367-2739)
MODEL H-120-1
(NSN 4520-01-4390-1682)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors, or if you would like to recommend any improvements to the procedures in this publication, please let us know. The preferred method is to submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the Internet on the TACOM Unique Logistics Support Applications (TULSA) Web site. The Internet address is https://tulsa.tacom.army.mil. Access to all applications requires CAC authentication, and you must complete the Access Request form the first time you use it. The DA Form 2028 is located under the TULSA Applications on the left-hand navigation bar. Fill out the form and click on SUBMIT. Using this form on the TULSA Web site will enable us to respond more quickly to your comments and to better manage the DA Form 2028 program. You may also mail, e-mail, or fax your comments or DA Form 2028 directly to the U.S. Army TACOM Life Cycle Management Command. The postal mail address is U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP/ TECH PUBS, MS 727, 6501 E. 11 Mile Road, Warren, MI 48397-5000. The e-mail address is tacomlcmc.daform2028@us.army.mil. The fax number is DSN 786-1856 or Commercial (586) 282-1856. A reply will be furnished to you.

CURRENT AS OF 29 MARCH 2013

*This manual supersedes TM 9-4520-258-14, dated 31 August 1994, and TM 9-4520-258-24P, dated 1 June 2001.

DISTRIBUTION STATEMENT A – Approved for public release, distribution is unlimited.

TABLE OF CONTENTS

Page No.
WP Sequence No.

HOW TO USE THIS MANUAL . . . . .

CHAPTER 1. GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION

GENERAL INFORMATION . . . . . WP 0001
Table 1. Nomenclature Cross-Reference List . . . . . WP 0001
Table 2. Acronyms and Abbreviations List. . . . . WP 0001

EQUIPMENT DESCRIPTION AND DATA . . . . . WP 0002
Figure 1. Front and Right Side Components. . . . . WP 0002
Figure 2. Rear and Left Side Components. . . . . WP 0002
Figure 3. Heater Interior . . . . . WP 0002
Table 1. Components, Dimensions, and Weights. . . . . WP 0002
Table 2. Fuel Types . . . . . WP 0002
Table 3. Fuel Pressure Settings . . . . . WP 0002

THEORY OF OPERATION . . . . . WP 0003
Figure 1. ASH Electrical System Schematic. . . . . WP 0003
Figure 2. Fuel System Schematic. . . . . WP 0003
Figure 3. ASH Airflow Schematic. . . . . WP 0003

CHAPTER 2. OPERATOR INSTRUCTIONS

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS . . . . . WP 0004
Figure 1. ASH Front and Right Side Controls and Indicators. . . . . WP 0004
Figure 2. ASH Rear and Left Side Controls and Indicators. . . . . WP 0004

OPERATION UNDER USUAL CONDITIONS . . . . . WP 0005
Figure 1. Fuel Tank Selection. . . . . WP 0005
Figure 2. Fueling the ASH. . . . . WP 0005
Figure 3. Power Connection. . . . . WP 0005
Figure 4. Operation, Ventilation Mode. . . . . WP 0005
Figure 5. Operation, Auto Heating Mode. . . . . WP 0005
Figure 6. Operation, Auto Heating Mode, HI Temperature. . . . . WP 0005
Figure 7. Operation, Manual Heating Mode. . . . . WP 0005
Figure 8. Shutdown. . . . . WP 0005

OPERATION UNDER UNUSUAL CONDITIONS AND ENVIRONMENTS . . . . . WP 0006

EMERGENCY PROCEDURES UNDER UNUSUAL CONDITIONS . . . . . WP 0007

STOWAGE AND DECAL AND DATA PLATE GUIDE . . . . . WP 0008
Figure 1. ASH Stowage Locations . . . . . WP 0008
Figure 2. Operating Instructions Data Plate. . . . . WP 0008
Figure 3. Control Panel and Fuel Pressure Data Plates. . . . . WP 0008
Figure 4. Control Box Wiring Data Plates. . . . . WP 0008
Figure 5. ASH and Supply Connection Data Plates. . . . . WP 0008
Figure 6. Miscellaneous Decals and Data Plates. . . . . WP 0008
Figure 7. Remote Control Thermostat Data Plate. . . . . WP 0008
Figure 8. Rear Panel Decals and Data Plates. . . . . WP 0008

CHAPTER 3. TROUBLESHOOTING PROCEDURES

TROUBLESHOOTING INDEX . . . . . WP 0009

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

OPERATOR TROUBLESHOOTING PROCEDURES . . . . . WP 0010
Figure 1. ASH Will Not Start. . . . . WP 0010
Figure 2. Combustion Air Fan Does Not Operate. . . . . WP 0010
Figure 3. Fuel Pressure Stays at 25 PSI or Less in Heat Auto or Heat Manual Modes. . . . WP 0010
Figure 4. ASH Flames Out Repeatedly (More Than 3 Times in a Row). . . . . WP 0010
Figure 5. No Combustion in Heat Auto Mode . . . . . WP 0010
Figure 6. Excessive Black Smoke in Exhaust. . . . . WP 0010
Figure 7. Fan Motor Slows Down or Indicator Lights Dim. . . . . WP 0010

FIELD TROUBLESHOOTING PROCEDURES. . . . . WP 0011
Figure 1. Troubleshooting Component Location Guide. . . . . WP 0011
Figure 2. ASH Will Not Start . . . . . WP 0011
Figure 3. Combustion Fan Does Not Operate . . . . . WP 0011
Figure 4. Fuel Pressure Stays at 25 PSI or Less in Heat Auto or Heat Manual.. . . . . WP 0011
Figure 5. ASH Flames Out Repeatedly (More Than 3 Times in a Row) . . . . . WP 0011
Figure 6. No Fuel Pressure Indicated. . . . . WP 0011
Figure 7. Low Fuel Pressure Indicated. . . . . WP 0011
Figure 8. Excessive Black Smoke in Exhaust. . . . . WP 0011
Figure 9. Fan Motor Slows Down; Indicator Lights Dim. . . . . WP 0011
Figure 10. Improper/No Spark in Igniter. . . . . WP 0011
Figure 11. ASH Backfires or Rumbles in Heat Auto and/or Heat Manual Modes. . . . . WP 0011
Figure 12. Combustion Fan Does Not Operate (Black Exhaust Smoke and Loud Rumble). WP 0011
Figure 13. No Combustion in Heat Auto Mode. . . . . WP 0011
Figure 14. No Combustion in Heat Manual Mode . . . . . WP 0011

CHAPTER 4. PREVENTIVE MAINTENANCE INSTRUCTIONS

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION . . . . . WP 0012

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) . . . . . WP 0013
Figure 1. Access Doors and Panels. . . . . WP 0013
Figure 2. Control Panel. . . . . WP 0013
Figure 3. Power Cable and Remote Thermostat Cable. . . . . WP 0013
Figure 4. Air Inlet Cover, Supply and Return Air Duct Covers. . . . . WP 0013
Figure 5. Supply and Return Air Ducts. . . . . WP 0013
Figure 6. Fuel Gauge and Filler Neck. . . . . WP 0013
Figure 7. Exhaust Pipe and Elbow. . . . . WP 0013
Figure 8. Jack Assembly. . . . . WP 0013
Figure 9. Wheel Assembly. . . . . WP 0013
Figure 10. Sight Glass. . . . . WP 0013
Figure 11. External Fuel Connection and Hose. . . . . WP 0013
Figure 12. Exhaust Pipe and Elbow. . . . . WP 0013
Figure 13. Supply and Return Air Ducts. . . . . WP 0013
Figure 14. Sight Glass. . . . . WP 0013
Figure 15. ASH Unit. . . . . WP 0013
Figure 16. External Fuel Connection and Hose. . . . . WP 0013
Figure 17. Fuel Gauge and Filler Neck. . . . . WP 0013
Figure 18. Supply and Return Air Ducts. . . . . WP 0013
Figure 19. Air Inlet Cover, Supply and Return Air Duct Covers. . . . . WP 0013
Figure 20. Power Cable. . . . . WP 0013
Figure 21. Control Panel. . . . . WP 0013
Figure 22. Access Doors and Top and Rear Panels. . . . . WP 0013
Figure 23. Exhaust Pipe and Elbow. . . . . WP 0013
Figure 24. Information, Instruction, and Schematic Instruction Plates. . . . . WP 0013

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)	WP 0014
Figure 1. Frame Assembly.	WP 0014
Figure 2. Control Box.	WP 0014
Figure 3. Combustor Control Relay.	WP 0014
Figure 4. Air Pressure Switch.	WP 0014
Figure 5. Thermostat Assembly.	WP 0014
Figure 6. Circulating Air Fan/Pump/Motor Assembly: Air Fan, Pump, Motor, and Base.	WP 0014
Figure 7. Circulating Air Fan/Pump/Motor Assembly: Solenoid Valves and Fuel Filter.	WP 0014
Figure 8. Combustion Air Fan Assembly.	WP 0014
Figure 9. Heat Exchangers and Transformer.	WP 0014
Figure 10. Heat Exchanger Assembly: Burner Assembly.	WP 0014
Figure 11. Burner Assembly.	WP 0014
Figure 12. Fuel Tank Assembly and Fuel Lines.	WP 0014
CHAPTER 5. MAINTENANCE INSTRUCTIONS	
SERVICE UPON RECEIPT	WP 0015
Figure 1. ASH Packaging.	WP 0015
Figure 2. Assembly of Equipment	WP 0015
Figure 3. Supply Air Duct and Return Air Duct Connection.	WP 0015
Figure 4. External Fuel Source Connection.	WP 0015
Figure 5. External Power Cable Adapter Cord.	WP 0015
EXHAUST PIPE SERVICE AND REPLACEMENT	WP 0016
Figure 1. Exhaust Pipe Removal/Installation.	WP 0016
FLEXIBLE AIR DUCTS REPLACEMENT	WP 0017
Figure 1. Air Duct Removal/Installation.	WP 0017
CONTROL BOX COVER ASSEMBLY REPLACEMENT	WP 0018
Figure 1. Control Box Cover Removal/Installation.	WP 0018
TOP PANEL ASSEMBLY REPLACEMENT	WP 0019
Figure 1. Top Panel Removal/Installation.	WP 0019
REAR PANEL ASSEMBLY REPLACEMENT	WP 0020
Figure 1. Rear Panel Removal	WP 0020
Figure 2. Rear Panel Installation	WP 0020
FRONT AND REAR SIDE DOOR ASSEMBLIES REPLACEMENT	WP 0021
Figure 1. Front Side Door Removal/Installation.	WP 0021
Figure 2. Rear Side Door Removal/Installation.	WP 0021
DUCT COVER ASSEMBLY REPLACEMENT	WP 0022
Figure 1. Duct Cover Removal/Installation.	WP 0022
RETURN/SUPPLY SCREEN SERVICE AND REPLACEMENT.	WP 0023
Figure 1. Return/Supply Screen Removal/Installation.	WP 0023

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
CONTROL BOX PANEL ASSEMBLY REPLACEMENT	WP 0024
Figure 1. Control Box Panel: Mode Switch and Hourmeter Disassembly.	WP 0024
Figure 2. Control Box Panel: Thermostat and Power Circuit Breakers Disassembly.	WP 0024
Figure 3. Control Box Panel: Purge and Flame Reset Switches Disassembly.	WP 0024
Figure 4. Control Box Panel: Flameout, High Temp and Power Lights Disassembly.	WP 0024
Figure 5. Control Box Panel: Transformer/Terminal Boards Disassembly.	WP 0024
Figure 6. Control Box Panel Removal/Installation.	WP 0024
Figure 7. Control Box Panel: Terminal Boards/Transformer Assembly	WP 0024
Figure 8. Control Box Panel: Power, High Temp and Flameout Lights Assembly.	WP 0024
Figure 9. Control Box Panel: Purge and Flame Reset Switches Assembly.	WP 0024
Figure 10. Control Box Panel: Thermostat and Power Circuit Breakers Assembly.	WP 0024
Figure 11. Control Box Panel: Hourmeter and Mode Switch Assembly.	WP 0024
CONTROL BOX ASSEMBLY REPLACEMENT	WP 0025
Figure 1. Control Box Removal/Installation.	WP 0025
FUEL PRESSURE GAUGE REPLACEMENT	WP 0026
Figure 1. Fuel Pressure Gauge Replacement.	WP 0026
COMBUSTOR CONTROL RELAY ASSEMBLY REPLACEMENT	WP 0027
Figure 1. Combustor Control Relay Removal	WP 0027
Figure 2. Combustor Control Relay Installation	WP 0027
AIR PRESSURE SWITCH REPLACEMENT	WP 0028
Figure 1. Air Pressure Switch Removal/Installation.	WP 0028
EXTERNAL FUEL CONNECTION AND HOSE REPLACEMENT	WP 0029
Figure 1. External Fuel Hose Removal/Installation	WP 0029
Figure 2. External Fuel Adapter Removal/Installation.	WP 0029
FUEL LINE ASSEMBLIES REPLACEMENT	WP 0030
FUEL TANK ASSEMBLY REPLACEMENT	WP 0031
Figure 1. Fuel Drain Cover Removal.	WP 0031
Figure 2. Fuel Tank Removal.	WP 0031
Figure 3. Fuel Tank Installation.	WP 0031
Figure 4. Fuel Tank Installation.	WP 0031
FUEL PUMP AND SOLENOID VALVES REPLACEMENT	WP 0032
Figure 1. Fuel Pump and Solenoid Valves Removal	WP 0032
Figure 2. Fuel Pump and Solenoid Valves Installation.	WP 0032
Figure 3. Fuel Pump and Solenoid Valves Installation.	WP 0032
CIRCULATING AIR MOTOR AND FAN REPLACEMENT	WP 0033
Figure 1. Circulating Air Motor and Fan Removal.	WP 0033
Figure 2. Circulating Air Motor and Fan Installation.	WP 0033
CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY REPLACEMENT	WP 0034
Figure 1. Circulating Air Fan/Pump/Motor Assembly Removal.	WP 0034
COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT	WP 0035
Figure 1. Combustion Fan Removal	WP 0035
Figure 2. Combustion Fan Assembly Installation	WP 0035
HEAT EXCHANGER ASSEMBLY REPLACEMENT.	WP 0036
Figure 1. Heat Exchanger Assembly Removal: Burner Access Port Cover.	WP 0036
Figure 2. Heat Exchanger Assembly Removal: Flame Sensor.	WP 0036
Figure 3. Heat Exchanger Assembly Removal/Installation: Fuel Line and Sight Glass.	WP 0036
Figure 4. Heat Exchanger Assembly Installation: Flame Sensor.	WP 0036
Figure 5. Heat Exchanger Assembly Installation: Burner Access Port Cover Plate.	WP 0036

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
HEAT EXCHANGER MODEL H-120 REPLACEMENT	WP 0037
Figure 1. Heat Exchanger (Model H-120) Overview of Structural Components.	WP 0037
Figure 2. Heat Exchanger (Model H-120) Removal: Preparation.	WP 0037
Figure 3. Heat Exchanger (Model H-120) Primary Brace Removal.	WP 0037
Figure 4. Heat Exchanger (Model H-120) Removal/Installation.	WP 0037
Figure 5. Heat Exchanger (Model H-120) Installation: Primary Brace & Clamp.	WP 0037
Figure 6. Heat Exchanger (Model H-120) Installation: Mounting Ring & Heat Shield.	WP 0037
Figure 7. Heat Exchanger (Model H-120) Installation: Hoses & Clamps.	WP 0037
HEAT EXCHANGER MODEL H-120-1 REPLACEMENT	WP 0038
Figure 1. Heat Exchanger (Model H-120-1) Overview of Structural Components.	WP 0038
Figure 2. Heat Exchanger (Model H-120-1) Removal: Preparation.	WP 0038
Figure 3. Heat Exchanger (Model H-120-1) Primary Brace Removal.	WP 0038
Figure 4. Heat Exchanger (Model H-120-1) Removal/Installation.	WP 0038
Figure 5. Heat Exchanger (Model H-120-1) Installation: Primary Brace & Clamp.	WP 0038
Figure 6. Heat Exchanger (Model H-120-1) Installation: Mounting Ring & Heat Shield.	WP 0038
Figure 7. Heat Exchanger (Model H-120-1) Installation: Hoses & Clamps.	WP 0038
THERMOSTAT ASSEMBLY REPLACEMENT	WP 0039
Figure 1. Thermostat Assembly Removal/Installation.	WP 0039
TRANSFORMER ASSEMBLY (MODEL H-120) REPLACEMENT.	WP 0040
Figure 1. Transformer (Model H-120) Removal.	WP 0040
Figure 2. Transformer (Model H-120) Installation.	WP 0040
TRANSFORMER ASSEMBLY (MODEL H-120-1) REPLACEMENT	WP 0041
Figure 1. Transformer (Model H-120-1) Removal.	WP 0041
Figure 2. Transformer (Model H-120-1) Installation	WP 0041
BURNER ASSEMBLY REPLACEMENT.	WP 0042
Figure 1. Burner Assembly Removal/Installation.	WP 0042
REMOTE CONTROL THERMOSTAT AND CABLE REPLACEMENT	WP 0043
Figure 1. Remote Control Thermostat and Cable Disassembly/Assembly.	WP 0043
POWER CABLE ASSEMBLY REPLACEMENT	WP 0044
Figure 1. Power Cable Removal/Installation.	WP 0044
EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPLACEMENT	WP 0045
Figure 1. External Power Cable Adapter Cord Replacement.	WP 0045
Figure 2. Internal Power Cable Adapter Cord (J3) Removal/Installation.	WP 0045
JACK ASSEMBLY REPLACEMENT	WP 0046
Figure 1. Jack Assembly.	WP 0046
WHEEL ASSEMBLY REPLACEMENT	WP 0047
Figure 1. Wheel Assembly Removal/Installation.	WP 0047
DAMPER ASSEMBLY REPLACEMENT	WP 0048
Figure 1. Damper Assembly Removal/Installation.	WP 0048

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
FRAME ASSEMBLY REPLACEMENT	WP 0049
Figure 1. Disassembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3)	WP 0049
Figure 2. Disassembly of Fuel Drain Ring/Cover & Electrical Power Lead-In.	WP 0049
Figure 3. Disassembly of Heat Exchanger Brace and Wheel Pivot.	WP 0049
Figure 4. Removal of Insulation.	WP 0049
Figure 5. Lift/Tie-Down Rings, Data Plates, and Internal Power Cable Adapter Cord (J3) Assembly	WP 0049
Figure 6. Assembly of Fuel Drain Ring/Cover & Electrical Power Lead-In.	WP 0049
Figure 7. Assembly of Heat Exchanger Brace and Wheel Pivot.	WP 0049
Figure 8. Installation of Insulation.	WP 0049
Table 1. Frame Assembly Insulation: WP 0049, Figure 4 Call-Out Number Cross Reference	WP 0049
Table 2. Exterior Panel Insulation Cross Reference	WP 0049
Table 3. Frame Assembly Insulation: WP 0049, Figure 4 Call-Out Number Cross Reference	WP 0049
Table 4. Exterior Panel Insulation Cross Reference	WP 0049
FLEXIBLE AIR DUCTS SERVICE AND REPAIR	WP 0050
Figure 1. Air Duct Inspection, Service, Removal, Repair, and Installation.	WP 0050
CONTROL BOX COVER ASSEMBLY REPAIR	WP 0051
Figure 1. Control Box Cover Removal, Disassembly, Assembly, and Installation.	WP 0051
TOP PANEL ASSEMBLY REPAIR	WP 0052
Figure 1. Top Panel Removal, Disassembly, Assembly, and Installation.	WP 0052
REAR PANEL ASSEMBLY REPAIR	WP 0053
Figure 1. Rear Panel Assembly Removal	WP 0053
Figure 2. Rear Panel Disassembly	WP 0053
Figure 3. Rear Panel Assembly.	WP 0053
Figure 4. Rear Panel Assembly.	WP 0053
Figure 5. Rear Panel Assembly.	WP 0053
Figure 6. Rear Panel Assembly.	WP 0053
Figure 7. Rear Panel Installation	WP 0053
FRONT AND REAR SIDE DOOR ASSEMBLIES REPAIR	WP 0054
Figure 1. Front Side Door Removal/Installation.	WP 0054
Figure 2. Front Side Door Disassembly/Assembly.	WP 0054
Figure 3. Rear Side Door Removal/Installation.	WP 0054
Figure 4. Rear Side Door Disassembly/Assembly.	WP 0054
DUCT COVER ASSEMBLY REPAIR	WP 0055
Figure 1. Duct Cover Inspection, Removal, Repair, and Installation.	WP 0055
CONTROL BOX PANEL ASSEMBLY REPAIR	WP 0056
Figure 1. Control Box Panel: Mode Switch and Hourmeter Disassembly.	WP 0056
Figure 2. Control Box Panel: Thermostat and Power Circuit Breakers Disassembly.	WP 0056
Figure 3. Control Box Panel: Purge and Flame Reset Switches Disassembly.	WP 0056
Figure 4. Control Box Panel: Flameout, High Temp, and Power Lights Disassembly.	WP 0056
Figure 5. Control Box Panel: Transformer/Terminal Boards Disassembly.	WP 0056
Figure 6. Control Box Panel: Terminal Boards/Transformer Assembly	WP 0056
Figure 7. Control Box Panel: Power, High-Temp, and Flameout Lights Assembly.	WP 0056
Figure 8. Control Box Panel: Purge and Flame Reset Switches Assembly.	WP 0056
Figure 9. Control Box Panel: Thermostat and Power Circuit Breakers Assembly.	WP 0056
Figure 10. Control Box Panel: Mode Switch and Hourmeter Assembly.	WP 0056
CONTROL BOX ASSEMBLY REPAIR	WP 0057
Figure 1. Control Box Removal/Installation.	WP 0057
Figure 2. Control Box Disassembly/Assembly	WP 0057

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
COMBUSTOR CONTROL RELAY ASSEMBLY REPAIR	WP 0058
Figure 1. Combustor Control Relay Removal	WP 0058
Figure 2. Combustor Control Relay Disassembly/Assembly.	WP 0058
Figure 3. Combustor Control Relay Installation	WP 0058
AIR PRESSURE SWITCH TEST, REPAIR, AND ADJUSTMENT	WP 0059
Figure 1. Air Pressure Switch: Test.	WP 0059
Figure 2. Air Pressure Switch Removal/Installation.	WP 0059
Figure 3. Air Pressure Switch Adjustment.	WP 0059
EXTERNAL FUEL CONNECTION AND HOSE REPAIR.	WP 0060
Figure 1. External Fuel Hose Removal, Disassembly, Assembly, and Installation.	WP 0060
Figure 2. External Fuel Connection Removal, Disassembly, Assembly, and Installation.	WP 0060
FUEL LINES ASSEMBLIES REPAIR	WP 0061
FUEL TANK ASSEMBLY REPAIR	WP 0062
Figure 1. Fuel Tank Removal.	WP 0062
Figure 2. Fuel Tank Removal.	WP 0062
Figure 3. Fuel Tank Disassembly.	WP 0062
Figure 4. Fuel Tank Disassembly.	WP 0062
Figure 5. Fuel Tank Assembly..	WP 0062
Figure 6. Fuel Tank Assembly..	WP 0062
Figure 7. Fuel Tank Installation.	WP 0062
Figure 8. Fuel Tank Installation.	WP 0062
FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT	WP 0063
Figure 1. Fuel Pump Removal	WP 0063
Figure 2. Fuel Pump and Solenoid Valves Assembly/Disassembly.	WP 0063
Figure 3. Fuel Pump and Solenoid Valves Installation.	WP 0063
Figure 4. Fuel Pump and Solenoid Valves Installation.	WP 0063
Figure 5. Fuel Pump Adjustment.	WP 0063
CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY REPAIR.	WP 0064
Figure 1. Circulating Air Fan/Pump/Motor Assembly Removal.	WP 0064
COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR	WP 0065
Figure 1. Combustion Fan Removal	WP 0065
Figure 2. Combustion Fan Disassembly/Assembly.	WP 0065
Figure 3. Combustion Fan Assembly Installation	WP 0065
HEAT EXCHANGER ASSEMBLY REPAIR	WP 0066
Figure 1. Burner Access Port Cover Disassembly/Removal.	WP 0066
Figure 2. Flame Sensor Removal.	WP 0066
Figure 3. Sight Glass & Fuel Line Removal/Installation.	WP 0066
Figure 4. Flame Sensor Installation.	WP 0066
Figure 5. Heat Exchanger Burner Access Port Cover.	WP 0066

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
HEAT EXCHANGER MODEL H-120 REPAIR	WP 0067
Figure 1. Heat Exchanger (Model H-120) Overview of Structural Components.	WP 0067
Figure 2. Preparation for Heat Exchanger (Model H-120) Removal.	WP 0067
Figure 3. Heat Exchanger (Model H-120) Primary Brace Removal.	WP 0067
Figure 4. Heat Exchanger (Model H-120) Removal/Installation.	WP 0067
Figure 5. Heat Exchanger (Model H-120) Disassembly: Mounting Ring.	WP 0067
Figure 6. Heat Exchanger (Model H-120) Disassembly: Clamps.	WP 0067
Figure 7. Heat Exchanger (Model H-120) Clamp Assembly.	WP 0067
Figure 8. Heat Exchanger (Model H-120) Assembly.	WP 0067
Figure 9. Heat Exchanger (Model H-120) Assembly: Mounting Ring.	WP 0067
Figure 10. Heat Exchanger (Model H-120) Primary Brace Installation.	WP 0067
Figure 11. Heat Exchanger (Model H-120) Installation: Primary Brace & Clamp.	WP 0067
Figure 12. Heat Exchanger (Model H-120) Installation: Mounting Ring & Heat Shield.	WP 0067
Figure 13. Heat Exchanger (Model H-120) Installation: Hoses & Clamps.	WP 0067
HEAT EXCHANGER MODEL H-120-1 REPAIR	WP 0068
Figure 1. Heat Exchanger (Model H-120-1) Overview of Structural Components.	WP 0068
Figure 2. Preparation for Heat Exchanger (Model H-120-1) Removal.	WP 0068
Figure 3. Heat Exchanger (Model H-120-1) Primary Brace Removal.	WP 0068
Figure 4. Heat Exchanger (Model H-120-1) Removal/Installation.	WP 0068
Figure 5. Heat Exchanger (Model H-120-1) Disassembly: Mounting Ring.	WP 0068
Figure 6. Heat Exchanger (Model H-120-1) Disassembly: Shell & Clamps.	WP 0068
Figure 7. Heat Exchanger (Model H-120-1) Assembly: Clamp.	WP 0068
Figure 8. Heat Exchanger (Model H-120-1) Assembly.	WP 0068
Figure 9. Heat Exchanger (Model H 120-1) Assembly: Mounting Ring.	WP 0068
Figure 10. Heat Exchanger (Model H-120-1) Installation: Primary Brace.	WP 0068
Figure 11. Heat Exchanger (Model H-120-1) Installation: Primary Brace & Clamp.	WP 0068
Figure 12. Heat Exchanger (Model H-120-1) Installation: Mounting Ring & Heat Shield.	WP 0068
Figure 13. Heat Exchanger (Model H-120-1) Installation: Hoses & Clamps.	WP 0068
THERMOSTAT ASSEMBLY REPAIR	WP 0069
Figure 1. Thermostat Assembly Removal.	WP 0069
Figure 2. Thermostat Assembly Disassembly.	WP 0069
Figure 3. Thermostat Assembly Repair.	WP 0069
Figure 4. Thermostat Assembly Assembly.	WP 0069
Figure 5. Thermostat Assembly Installation.	WP 0069
TRANSFORMER ASSEMBLY (MODEL H-120) REPAIR	WP 0070
Figure 1. Transformer (Model H-120) Removal.	WP 0070
Figure 2. Transformer Model H-120 Installation	WP 0070
TRANSFORMER ASSEMBLY (MODEL H-120-1) REPAIR	WP 0071
Figure 1. Transformer (Model H-120-1) Removal.	WP 0071
Figure 2. Transformer Model H-120-1 Installation	WP 0071
BURNER ASSEMBLY REPAIR	WP 0072
Figure 1. Burner Assembly Removal.	WP 0072
Figure 2. Disassembly of the Burner Assembly.	WP 0072
Figure 3. Burner Assembly: Petal Valve & Fuel Tube Nozzle Screen/Filter.	WP 0072
Figure 4. Burner Assembly: Fuel Tube to Baffle & Block Connection.	WP 0072
Figure 5. Burner Assembly: Electrode Preparation.	WP 0072
Figure 6. Burner Assembly: Electrode to Baffle & Block Connection.	WP 0072
Figure 7. Burner Assembly: Block Assembly to Flange Burner Assembly Housing.	WP 0072
Figure 8. Burner Assembly Installation.	WP 0072

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
REMOTE CONTROL THERMOSTAT REPAIR	WP 0073
Figure 1. Remote Control Thermostat Disassembly.	WP 0073
Figure 2. Thermostat Cable Repair.	WP 0073
Figure 3. Remote Control Thermostat Assembly.	WP 0073
POWER CABLE ASSEMBLY REPAIR	WP 0074
Figure 1. Power Cable Removal.	WP 0074
Figure 2. Power Cable Repair.	WP 0074
Figure 3. Power Cable Installation.	WP 0074
EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPAIR	WP 0075
Figure 1. Internal Power Cable Adapter Cord (J3) Removal/Installation.	WP 0075
Figure 2. External/Internal Power Cable Adapter Cord Repair.	WP 0075
WHEEL ASSEMBLY REPAIR	WP 0076
Figure 1. Wheel Assembly Removal/Installation.	WP 0076
DAMPER ASSEMBLY REPAIR	WP 0077
Figure 1. Damper Assembly Removal.	WP 0077
Figure 2. Damper Assembly Installation.	WP 0077
FRAME ASSEMBLY REPAIR	WP 0078
Figure 1. Disassembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3)	WP 0078
Figure 2. Disassembly of Fuel Drain Ring/Cover & Electrical Power Lead-In.	WP 0078
Figure 3. Disassembly of Heat Exchanger Brace and Wheel Pivot.	WP 0078
Figure 4. Removal of Insulation.	WP 0078
Figure 5. Assembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3)	WP 0078
Figure 6. Assembly of Fuel Drain Ring/Cover & Electrical Power Lead-In.	WP 0078
Figure 7. Assembly of Heat Exchanger Brace and Wheel Pivot.	WP 0078
Figure 8. Installation of Insulation.	WP 0078
Table 1. Frame Assembly Insulation: WP 0049, Figure 4 Call-Out Number Cross Reference	WP 0078
Table 2. Exterior Panel Insulation Cross Reference	WP 0078
Table 3. Frame Assembly Insulation: WP 0049, Figure 4 Call-Out Number Cross Reference	WP 0078
Table 4. Exterior Panel Insulation Cross Reference	WP 0078
PREPARATION FOR STORAGE AND SHIPMENT	WP 0079
LUBRICATION INSTRUCTIONS	WP 0080
Figure 1. Lubricating the ASH Wheels.	WP 0080
Table 1. Lubricant for Wheels	WP 0080
ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION	WP 0081
ILLUSTRATED LIST OF MANUFACTURED ITEMS — CHAIN, DAMPER	WP 0082
Figure 1. Chain, Damper (P/N CHN2).	WP 0082
ILLUSTRATED LIST OF MANUFACTURED ITEMS — CABLES	WP 0083
Figure 1. Cable, Duct Cover (P/N 60565-4).	WP 0083
Figure 2. Cable, Wheel Assembly.	WP 0083

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS	WP 0084
Figure 1. Gasket, Rear Panel Assembly (P/N 60000-158).	WP 0084
Figure 2. Gaskets, Top and Rear Panels.	WP 0084
Figure 3. Gasket, Damper (P/N 60105-5 and P/N 60205-5)	WP 0084
Figure 4. Gasket, Damper (P/N 60206-8 and 60206-9)	WP 0084
Figure 5. Gasket, Rear Panel (P/N 60638-24)..	WP 0084
Figure 6. Gasket, Fuel Drain Cover (P/N 60499-1)..	WP 0084
Figure 7. Gasket, Heat Exchange Assembly (P/N 60518-1).	WP 0084
Figure 8. Gasket, Combustion Fan Mount (P/N 60584-1 and P/N 60584-1).	WP 0084
Figure 9. Gasket, Combustion Fan Air Outlet (P/N 60588-1).	WP 0084
Figure 10. Gasket, Control Box Assembly.	WP 0084
Figure 11. Gasket, Timemeter.	WP 0084
Figure 12. Gasket, Transformer (1 of 2).	WP 0084
Figure 13. Gasket, Transformer (2 of 2).	WP 0084
ILLUSTRATED LIST OF MANUFACTURED ITEMS — GROMMET, EXHAUST PIPE STOWAGE.	WP 0085
Figure 1. Grommet, Exhaust Pipe Stowage..	WP 0085
ILLUSTRATED LIST OF MANUFACTURED ITEMS — HINGES	WP 0086
Figure 1. Hinges: Control Box Cover, Front Side Door, Rear Side Door (P/N 60033-1, 60617-1, and 60625-1).	WP 0086
Figure 2. Hinge, Control Box Assembly.	WP 0086
ILLUSTRATED LIST OF MANUFACTURED ITEMS — HOSE, COMBUSTION AIR FAN	WP 0087
Figure 1. Hose, Combustion Air Fan..	WP 0087
ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS	WP 0088
Figure 1. Insulation, Rear Panel (P/N 60169-1).	WP 0088
Figure 2. Insulation, Front Side Door (P/N 60174-1)	WP 0088
Figure 3. Insulation, Rear Side Door (P/N 60175-1).	WP 0088
Figure 4. Insulation, Rear Panel (P/N 60179-1).	WP 0088
Figure 5. Insulation, Top Panel (P/N 60188-1)..	WP 0088
Figure 6. Insulation, Top Panel (P/N 60188-2)..	WP 0088
Figure 7. Insulation, Top Panel (P/N 60188-3)..	WP 0088
Figure 8. Insulation Sleeve, Thermostat Assembly (P/N 60440-7).	WP 0088
Figure 9. Insulation, Frame (1 of 13)..	WP 0088
Figure 10. Insulation, Frame (2 of 13).	WP 0088
Figure 11. Insulation, Frame (3 of 13).	WP 0088
Figure 12. Insulation, Frame (4 of 13).	WP 0088
Figure 13. Insulation, Frame (5 of 13).	WP 0088
Figure 14. Insulation, Frame (6 of 13).	WP 0088
Figure 15. Insulation, Frame (7 of 13).	WP 0088
Figure 16. Insulation, Frame (8 of 13).	WP 0088
Figure 17. Insulation, Frame (9 of 13).	WP 0088
Figure 18. Insulation, Frame (10 of 13)..	WP 0088
Figure 19. Insulation, Frame (11 of 13)..	WP 0088
Figure 20. Insulation, Frame (12 of 13)..	WP 0088
Figure 21. Insulation, Frame (13 of 13)..	WP 0088
ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBES (NON-METALLIC)	WP 0089
Figure 1. Tube, Drain, Control Box Assembly (P/N 60075-1).	WP 0089
Figure 2. Tube, Air Pressure Switch (P/N 60079-1).	WP 0089

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBE ASSEMBLIES (METALLIC) . . . . WP 0090
Figure 1. Tube Assembly, Fuel Tank / Rear Panel. . . . . WP 0090
Figure 2. Tube Assembly, Rear Panel / Fuel Filter. . . . . WP 0090
Figure 3. Tube Assembly, Fuel Pump (P/N 60484-100).. . . . . WP 0090
Figure 4. Tube Assembly, Solenoid / Fuel Tank (P/N 60485-100). . . . . WP 0090
Figure 5. Tube Assembly, Fuel Pressure Gauge (P/N 60488-100). . . . . WP 0090
Figure 6. Tube Assembly, Rear Panel (P/N 60489-100). . . . . WP 0090
Figure 7. Tube Assembly, Fuel Pump (P/N 60487-100).. . . . . WP 0090

ILLUSTRATED LIST OF MANUFACTURED ITEMS — WIRES AND ELECTRICAL CABLE . . . WP 0091
Figure 1. Wire, External Power Cable Adapter Cord (P/N 13229E8567-2, 13229E8567-3, 13229E8567-4).. . . . . WP 0091
Figure 2. Wire, Braid (P/N 60216-32). . . . . WP 0091
Figure 3. Wires. . . . . WP 0091
Figure 4. Cable, Electrical (P/N 60411-7 and P/N 60411-17). . . . . WP 0091
Table 1. ASH Wire List . . . . . WP 0091

TORQUE LIMITS . . . . . WP 0092
Figure 1. Measuring Diameter and Threads per Inch.. . . . . WP 0092
Figure 2. Standard Capscrew Head Markings.. . . . . WP 0092
Figure 3. Metric Capscrew Head Markings. . . . . WP 0092
Table 1. Standard Dry Torque Limits . . . . . WP 0092
Table 2. Metric Dry Torque Limits . . . . . WP 0092

WIRING DIAGRAMS . . . . . WP 0093
Figure 1. Wire Dimensions. . . . . WP 0093
Figure 2. ASH Electrical Schematic. . . . . WP 0093
Figure 3. Operating Instructions and Electrical Schematic Plate. . . . . WP 0093
Figure 4. Wiring Diagram . . . . . WP 0093
Figure 5. ASH Electrical Schematic (without Filter, F1). . . . . WP 0093
Figure 6. Operating Instructions and Electrical Schematic Plate (without Filter F1). . . . WP 0093
Figure 7. Wiring Diagram (without Filter F1) . . . . . WP 0093
Table 1. ASH Wire List . . . . . WP 0093

CHAPTER 6. PARTS INFORMATION

INTRODUCTION . . . . . WP 0094
Table 1. SMR Code Explanation. . . . . WP 0094
Table 2. Usable On Codes. . . . . WP 0094

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 . . . . . WP 0095
Figure 1. Exhaust Pipe and Elbow.. . . . . WP 0095
Figure 2. Flexible Air Ducts.. . . . . WP 0095
Figure 3. Control Box Cover Assembly.. . . . . WP 0095
Figure 4. Top Panel Assembly. . . . . WP 0095
Figure 5. Rear Panel Assembly . . . . . WP 0095
Figure 6. Front Side Door Assembly. . . . . WP 0095
Figure 7. Rear Side Door Assembly. . . . . WP 0095
Figure 8. Duct Cover Assembly. . . . . WP 0095
Figure 9. Return/Supply Screen.. . . . . WP 0095

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02	WP 0096
Figure 10. Control Assembly.	WP 0096
Figure 11. Ground Wire, Terminal Strips and Transformer.	WP 0096
Figure 12. Control Box Assembly	WP 0096
Figure 13. Control Box Panel Assembly.	WP 0096
Figure 14. Fuel Pressure Gauge.	WP 0096
Figure 15. Combustor Control Relay Assembly and Air Pressure Switch	WP 0096
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03	WP 0097
Figure 16. External Fuel Connection and Hose.	WP 0097
Figure 17. Fuel Lines Assemblies.	WP 0097
Figure 18. Fuel Tank Assembly and Fuel Gauge	WP 0097
Figure 19. Fuel Drain Cover.	WP 0097
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04	WP 0098
Figure 20. Fan Pump/Motor Assembly.	WP 0098
Figure 21. Solenoid Valves.	WP 0098
Figure 22. Circulating Air Motor and Fan.	WP 0098
Figure 23. Fuel Pump.	WP 0098
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 05	WP 0099
Figure 24. Combustion Fan and Mount Assembly	WP 0099
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06	WP 0100
Figure 25. Heat Exchanger Assembly	WP 0100
Figure 26. Cover Plate and Thermostat Assembly.	WP 0100
Figure 27. Transformer Assembly Models H-120 and H-120-1.	WP 0100
Figure 28. Heat Exchanger Models H-120 and H-120-1	WP 0100
Figure 29. Burner Assembly	WP 0100
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 07	WP 0101
Figure 30. Remote Control Thermostat and Cable	WP 0101
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 08	WP 0102
Figure 31. Power Cable Assembly.	WP 0102
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 09	WP 0103
Figure 32. External Power Cable Adapter Cord.	WP 0103
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 10	WP 0104
Figure 33. Internal Power Cable Adapter Cord (J3).	WP 0104
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 11	WP 0105
Figure 34. Jack Assembly.	WP 0105
Figure 35. Wheel Assembly.	WP 0105
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 12	WP 0106
Figure 36. Damper Assembly	WP 0106
REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13	WP 0107
Figure 37. Tie Down Ring and Informational Plates.	WP 0107
Figure 38. Handbook Compartment.	WP 0107
Figure 39. Heat Exchanger Brace.	WP 0107
Figure 40. Frame Assembly.	WP 0107
BULK ITEMS	WP 0108
NATIONAL STOCK NUMBER INDEX.	WP 0109
PART NUMBER INDEX.	WP 0110

TABLE OF CONTENTS – (Continued)

	Page No. / WP Sequence No.
CHAPTER 7. SUPPORTING INFORMATION	
REFERENCES	WP 0111
MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION	WP 0112
MAINTENANCE ALLOCATION CHART	WP 0113
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS	WP 0114
ADDITIONAL AUTHORIZATION LIST	WP 0115
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST	WP 0116
TOOL IDENTIFICATION LIST	WP 0117
MANDATORY REPLACEMENT PARTS LIST	WP 0118
INDEX	Index–1

HOW TO USE THIS MANUAL

INTRODUCTION

HOW TO OBTAIN TECHNICAL MANUALS

When a new system is introduced to the Army inventory, it is the responsibility of the receiving units to notify and inform the unit publications clerk that a technical manual is available for the new system. Throughout the life cycle of the new system, the publications proponent will also provide updates and changes to the technical manual.

To receive new technical manuals or change packages to fielded technical manuals, provide the unit publications clerk the full technical manual number, title, date of publication, and number of copies required. The unit publications clerk will then justify the request through the unit publications officer. When the request is approved, DA Form 12-R is used to order the technical manual from the Army Publishing Directorate (APD).

Instructions for Unit Publications Clerk

Obtain the form and request a publications account from the APD Web site at http://www.apd.army.mil. Once on the Web site, click on the “Orders/Subscriptions/Reports” tab. From the drop-down menu, select “Establish an Account,” then select “Tutorial,” and follow the instructions in the tutorial presentation.

Complete information for obtaining Army publications can be found in DA PAM 25-33.

ORGANIZATION OF THIS MANUAL

In this manual, primary chapters appear in uppercase/capital letters; work packages are presented in numeric sequence, e.g., 0001, 0002; paragraphs within a work package are not numbered and are presented in a titled format. For a first level paragraph, titles are in all uppercase/capital letters, e.g., FRONT MATTER. Subordinate paragraph titles will have the first letter of the first word of each principle word all uppercase/capital letters, e.g., Manual Organization and Page Numbering System. The location of additional material that must be referenced is clearly marked. Illustrations supporting maintenance procedures/text are located underneath, or as close as possible to, their referenced paragraph.

FRONT MATTER. Front matter consists of front cover, warning summary, title block, table of contents, and how to use this manual page.

CHAPTER 1 – GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION. Chapter 1 contains introductory information on the ASH and its associated equipment as well as theory of operation.

CHAPTER 2 – OPERATOR INSTRUCTIONS. Chapter 2 provides operator instructions required for use of the ASH by the operator, including description and use of controls and indicators, operational deployment cycles, and cleaning.

CHAPTER 3 – TROUBLESHOOTING. Chapter 3 provides a troubleshooting index and operator and field troubleshooting procedures.

CHAPTER 4 – PREVENTIVE MAINTENANCE INSTRUCTIONS. Chapter 4 provides Preventative Maintenance Checks and Services (PMCS) instructions authorized at the operator and field maintenance levels.

CHAPTER 5 – FIELD MAINTENANCE INSTRUCTIONS. Chapter 5 provides maintenance procedures authorized at the maintainer level that includes repair and replacement of key components.

CHAPTER 6 – PARTS INFORMATION. Chapter 6 provides Repair Parts and Special Tools List (RPSTL) information, including authorized repair parts, special tools, special test, measurement, and diagnostic equipment (TMDE), and other special support equipment required for performance of operator and field maintenance of the ASH. This chapter also contains national stock number and part number cross reference tables.

CHAPTER 7 – SUPPORTING INFORMATION. Chapter 7 provides supporting information that includes the document reference table, the Maintenance Allocation Chart, special tools list, special remarks, Components of End Item List, Basic Issue Items List, Additional Authorization List, the Expendable/Durable Supplies and Material List, and the Mandatory Replacement Parts List.

REAR MATTER. Rear matter consists of alphabetical index, DA Form 2028, authentication page, and back cover.

HOW TO USE THIS MANUAL – (Continued)

Manual Organization and Page Numbering System

The manual is divided into seven chapters that detail the topics mentioned above. Within each chapter are work packages covering a wide range of topics. Each work package is numbered sequentially starting at page 1. The work package has its own page-numbering scheme and is independent of the page numbering used by other work packages. Each page of a work package has a page number of the form XXXX-YY where XXXX is the work package number (e.g., 0010 is work package 10) and YY represents the number of the page within that work package. A page number such as 0010-1/blank means that page 1 contains information, but page 2 of that work package has been intentionally left blank.

Finding Information

The table of contents permits the reader to find information in the manual quickly. The reader should start here first when looking for a specific topic. The table of contents lists the topics, figures, and tables contained within each chapter and the work package sequence number where it can be found.

Example: If the reader were looking for instructions on Operating Under Usual Conditions, the table of contents indicates that information can be found in chapter 2. Scanning down the listings for Chapter 2, information on how to operate the ASH can be found in WP 0005, Operation Under Usual Conditions (i.e., work package 5). An alphabetical index can be found at the back of the manual; specific topics are listed with the corresponding work package number.

CHAPTER 1

GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION

FOR

ARMY SPACE HEATER H-120, H-120-1

OPERATOR INSTRUCTIONS

GENERAL INFORMATION

SCOPE

This Technical Manual (TM) contains instructions for operation and maintenance of the Army Space Heater (ASH).

Type of Manual

Operator and Field Maintenance Manual including Repair Parts and Special Tools List.

Purpose of Equipment

The ASH is designed for heating and ventilating fixed and transportable shelters.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual; DA PAM 738-751, Functional Users Manual for the Army Maintenance Management Systems - Aviation (TAMMS-A); or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your ASH needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. If you have Internet access, the easiest and fastest way to report problems or suggestions is to follow the instructions and links below: DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual. We will send you a reply.

For ALL non-Aviation/Missile Warranty, EIR and PQDRs must be submitted through the Web Product Quality Deficiency Reporting (PQDR) site. Note that all CECOM managed (B16), including aviation, items must also be submitted through the following site. The Web PQDR Web site is: http://www.nslcptsmh.csd.disa.mil/webpqdr/webpqdr.htm.

New accounts can be established at the following address: http://www.nslcptsmh.csd.disa.mil/accessforms/uarform.htm.

All AMCOM (Aviation and Missile Command) Deficiency Reports (DRs), (Warranty, EIR, and PQDRs) must be submitted through the Joint Deficiency Reporting System JDRS) at https://jdrs.mil/DR_Initiate.cfm?service=AR.

You may also submit your information using a SF 368 (Product Quality Deficiency Report). You can send your SF 368 via e-mail, regular mail, or fax using the addresses/fax numbers specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual*(or DA PAM 738-751, Functional Users Manual for the Army Maintenance Management Systems - Aviation (TAMMS-A) for aviation systems).* We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

Corrosion specifically occurs with metals. It is an electrochemical process that causes the degradation of metals. It is commonly caused by exposure to moisture, acids, bases, or salts. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking.

Plastics, composites, and rubbers can also degrade. Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically UV) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking.

SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

OZONE DEPLETING SUBSTANCES (ODS)

There are no Ozone Depleting Substances (ODS) in the ASH.

GENERAL INFORMATION - (CONTINUED)

DESTRUCTION OF MATERIEL

Destruction of Army materiel to prevent enemy use shall be in accordance with TM 750-244-3.

PREPARATION FOR STORAGE OR SHIPMENT

Prepare the equipment for storage or shipment as described in WP 0079.

WARRANTY INFORMATION

The ASH is warranted for 60 months from the date of acceptance.

NOMENCLATURE CROSS-REFERENCE LIST

Following is a cross reference of official names and nomenclature.

Table 1. Nomenclature Cross-Reference List

Common Name	Official Nomenclature
ASH	Army Space Heater
Combustion Fan	Combustion Air Fan
Control Box	Control Box Assembly
Control Panel	Control Box Panel Assembly
O-ring	Preformed Packing
Ventilation Fan	Circulating Air Fan

LIST OF ABBREVIATIONS/ACRONYMS

Following is a list of acronyms and abbreviations contained in this manual.

Table 2. Acronyms and Abbreviations List

Acronym or Abbreviation	Item
amps	Amperes
AMCOM	Aviation and Missile Command
APD	Army Publishing Directorate
ASH	Army Space Heater
BII	Basic Issue Item
BOI	Basis of Issue
BTU	British Thermal Unit
CAGEC	Commercial and Government Entity Code
CBPK	Chemical and Biological Protection Kit
cfm	Cubic Feet Per Minute
cm	Centimeter
COEI	Components of End Item
CPC	Corrosion Prevention and Control
dB	Decibels
DAT	Discharge Air Thermostat
DR	Deficiency Report
EIR	Equipment Improvement Recommendation
EMP	Electromagnetic Pulse
FGC	Functional Group Code
GAA	Grease, Automotive, and Artillery
HCI	Hardness Critical Item
GMTK	General Mechanics Toolkit
gph	Gallons Per Hour
Hz	Hertz
IAW	In Accordance With
in-lb	Inch-Pounds
iwg	Inches of Water, gauge

GENERAL INFORMATION - (CONTINUED)

Acronym or Abbreviation	Item
JDRS	Joint Deficiency Reporting System
kPa	Kilopascals
L	Liter
M	Meter
MAC	Maintenance Allocation Chart
MSL	Mean Sea Level
MTOE	Modified Tables of Organization and Equipment
MWO	Modification Work Order
NBC	Nuclear, Biological, and Chemical
NHA	Next Higher Assembly
NIIN	National Item Identification Number
NSN	National Stock Number
ODS	Ozone Depleting Substances
P/N	Part Number
PMCS	Preventive Maintenance Checks and Services
PQDR	Product Quality Deficiency Report
PSI	Pounds Per Square Inch
QTY	Quantity
RPSTL	Repair Parts and Special Tools List
SATS	Standard Automotive Tool Set
SMR	Source, Maintenance and Recoverability
TLS	Temperature Limit Switch
SRA	Specialized Repair Activity
TMDE	Test, Measurement, and Diagnostic Equipment
TAMMS	The Army Maintenance Management System
U/M	Unit of Measure
UOC	Usable On Code
VAC	Volts Alternating Current
WP	Work Package

QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this manual. If quality of material requirements are not stated in this manual, the material must meet the requirements of the drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

SAFETY, CARE AND HANDLING, WARNINGS, CAUTIONS AND NOTES

Read the warning summary in the front of the manual.

Personnel must remove all items of jewelry (rings, bracelets, wristwatches, and neck chains) and loose clothing before working on equipment. Jewelry may short across an electrical circuit and cause severe burns or electrical shock and loose fitting clothing can get caught in moving equipment.

When performing ASH maintenance, keep in mind the purpose of the equipment is to heat and ventilate fixed and transportable shelters. Cleaning fluids, lubricants, preservatives, paint, or other chemicals must not be allowed to contaminate the interior of the ASH.

Operate the equipment after performing maintenance to ensure that repairs have been performed correctly and equipment can be returned to service.

GENERAL INFORMATION - (CONTINUED)

COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, Expendable/Durable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items, as applicable to your unit.

Repair parts are listed and illustrated in Chapter 6, WP 0095 through WP 0107.

No special tools are required. Refer to the Maintenance Allocation Chart (MAC) work package (WP 0113) for maintenance tasks, TMDE, and support equipment. Refer to the Illustrated List of Manufactured Items work packages, WP 0082 to WP 0091for parts that are to be fabricated.

END OF WORK PACKAGE

OPERATOR INSTRUCTIONS

EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES

The ASH is a portable unit that can be used as a heater or fresh air ventilator for shelters, vans, and other enclosed areas. In heating modes, the ASH can operate as either an air recirculator or fresh air heater. The ASH is rated at 120,000 BTU per hour and can operate up to 14 hours unattended on a 14 gallon (53 L) internal fuel tank. Operation can be extended beyond 14 hours when using an external fuel supply. The ASH operates as a heater in an ambient temperature range of –40 through +65 °F (–40 through +18.3 °C) and operates as a ventilator up to 100 °F (38 °C). The ASH operates from a 120 VAC, 50/60 Hz, single phase power source, provides quiet operation (less than 60 dB) for use in areas where personnel work or sleep, has a positive pressurized enclosure, and incorporates an adjustable fresh air damper assembly. The ASH includes a remote thermostat control, retractable wheels, and skids for mobility on ice and snow. One person can move the ASH when the wheels are extended. The ASH is also suitable for hardening for use in Nuclear, Biological, and Chemical (NBC) environments.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

FRONT AND RIGHT SIDE COMPONENTS

Control Panel Cover

The control panel cover (Figure 1, Item 1) protects the control panel.

Supply Air Outlet

The supply air outlet (Figure 1, Item 2) provides support to attach the supply air duct.

Return and Supply Air Duct Covers

The return and supply air duct covers (Figure 1, Item 3) prevent dust and debris from entering the ASH when not in operation or in storage.

Lubrication Chart

The lubrication chart (Figure 1, Item 4) provides information for proper lubrication of the ASH.

Jack Assembly

The jack assembly (Figure 1, Item 5) is used to raise the ASH to allow the wheels to be extended or retracted, and to level the ASH.

Supply Air Duct

The supply air duct (Figure 1, Item 6) moves hot air from the ASH to the shelter.

Return Air Duct

The return air duct (Figure 1, Item 7) brings air back to the ASH for reheating.

Power Cable

The power cable (Figure 1, Item 8) connects to a power source to operate the ASH.

External Power Cable Adapter Cord

The external power cable adapter cord (Figure 1, Item 9) adapts the ASH power cable to a 120 VAC single phase screw terminal supply.

Return Air Inlet

The return air inlet (Figure 1, Item 10) provides support to attach the return air duct.

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

Remote Thermostat Receptacle

The remote thermostat receptacle (Figure 1, Item 11) provides a receptacle for attaching the remote thermostat cable.

Fresh Air Damper

The fresh air damper (Figure 1, Item 12), when open, allows fresh air to be drawn into the ASH. It can be used in ventilation or heating mode.

Front Side Access Door

The front side access door (Figure 1, Item 13) provides access to the ASH interior for inspections/maintenance, the handbook compartment, the exhaust elbow, and fuel hose.

Remote Thermostat and Cable

The remote thermostat and cable (Figure 1, Item 14) controls temperature from inside the heated area.

Combustion Air Inlet

The combustion air inlet (Figure 1, Item 15) brings air into the combustion assembly.

Combustion Air Inlet Cover

The combustion air inlet cover (Figure 1, Item 16) keeps dust and debris from entering the ASH when not in operation or in storage.

Retractable Wheel Assembly (Right Side)

The retractable wheel assembly (Figure 1, Item 17) allows an individual to move and position the ASH when used in conjunction with the left side wheel assembly.

Rear Side Access Door

The rear side access door (Figure 1, Item 18) provides access to the ASH interior for inspections/maintenance and the remote thermostat.

Control Panel

The control panel (Figure 1, Item 19) contains the operator controls and indicators used during operation. The hinged panel provides a central location for troubleshooting the ASH electrical components/controls.

Instruction Plate

The instruction plate (Figure 1, Item 20) shows the electrical and fuel schematics and provides instructions for operating the ASH.

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

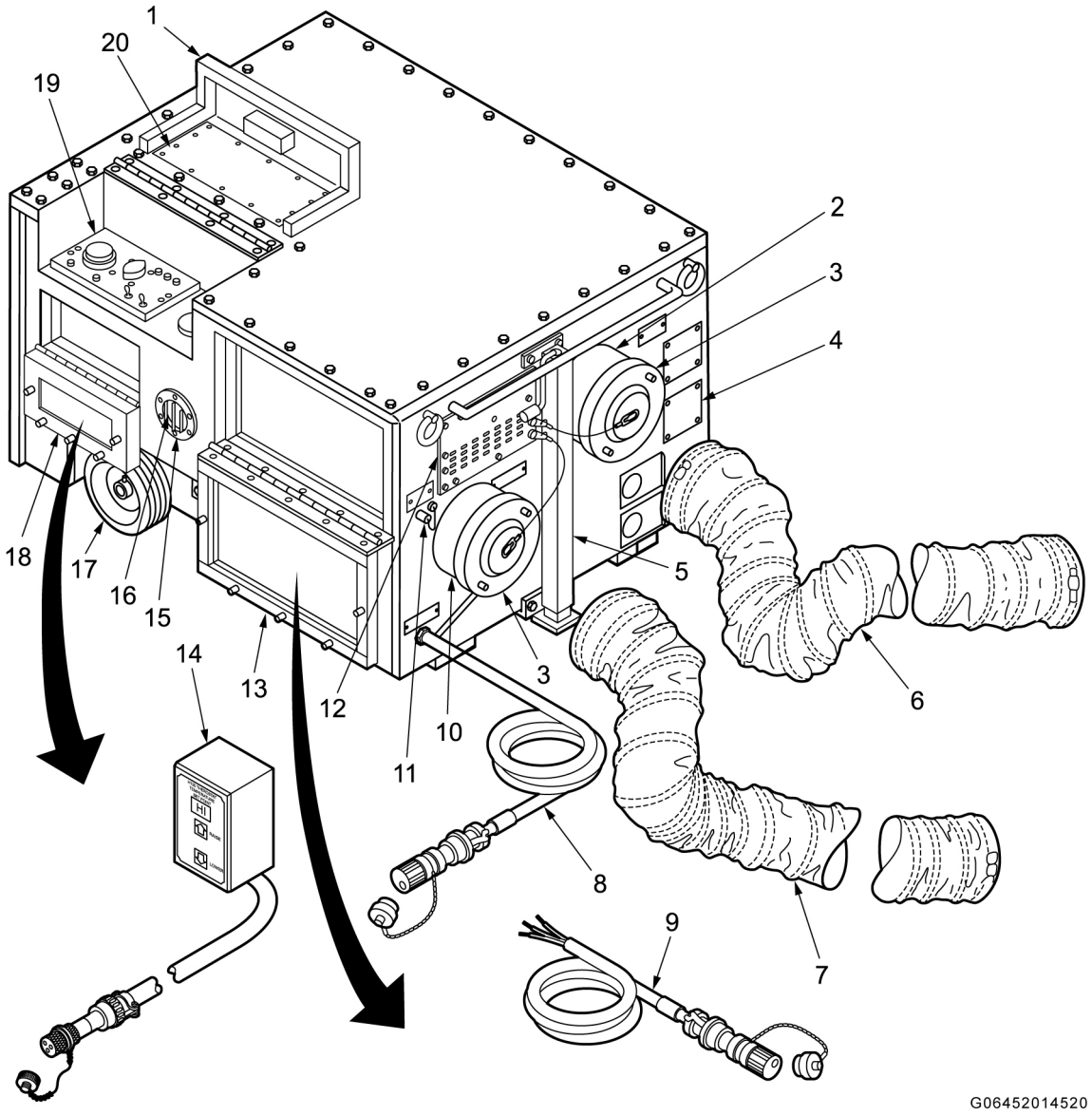


Figure 1. Front and Right Side Components.

REAR AND LEFT SIDE COMPONENTS

Exhaust Pipe

The exhaust pipe (Figure 2, Item 1) provides the removal of exhaust gas from the heater during operation.

Fuel Selector Valve

The fuel selector valve (Figure 2, Item 2) allows the user to select either an external fuel source or the ASH's internal fuel tank.

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

External Fuel Connection

The external fuel connection (Figure 2, Item 3) is a quick disconnect and is used to connect the external fuel hose to the ASH. It is protected by a removable cap.

Fuel Tank Cap

The fuel tank cap (Figure 2, Item 4) prevents dirt and debris from entering the internal fuel tank. The cap is removable for filling the internal fuel tank.

Fuel Gauge

The fuel gauge (Figure 2, Item 5) indicates the amount of fuel remaining in the internal fuel tank.

External Fuel Hose

The external fuel hose (Figure 2, Item 6) connects to the unit external fuel connector and an external fuel source.

Exhaust Pipe Stowage Compartment

The exhaust pipe is stored in the exhaust pipe stowage compartment (Figure 2, Item 7) when the ASH is being shipped or not in use.

Sight Glass

The sight glass (Figure 2, Item 8) is used to look into the burner/heat exchanger compartment to ensure that ignition is on and the burner flame is functioning properly.

Exhaust Elbow

The exhaust elbow (Figure 2, Item 9) when attached to the exhaust port at the rear of the ASH directs exhaust fumes upward into the exhaust pipe.

Exhaust Cover Plate

The exhaust cover plate (Figure 2, Item 10) covers the ASH exhaust port when shipped or in stowage. The exhaust cover plate is stowed in the exhaust elbow stowage position when the elbow is attached to exhaust port.

Retractable Wheel Assembly (Left Side)

The retractable wheel assembly (Figure 2, Item 11) allows an individual to move and position the ASH when used in conjunction with the right side wheel assembly.

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

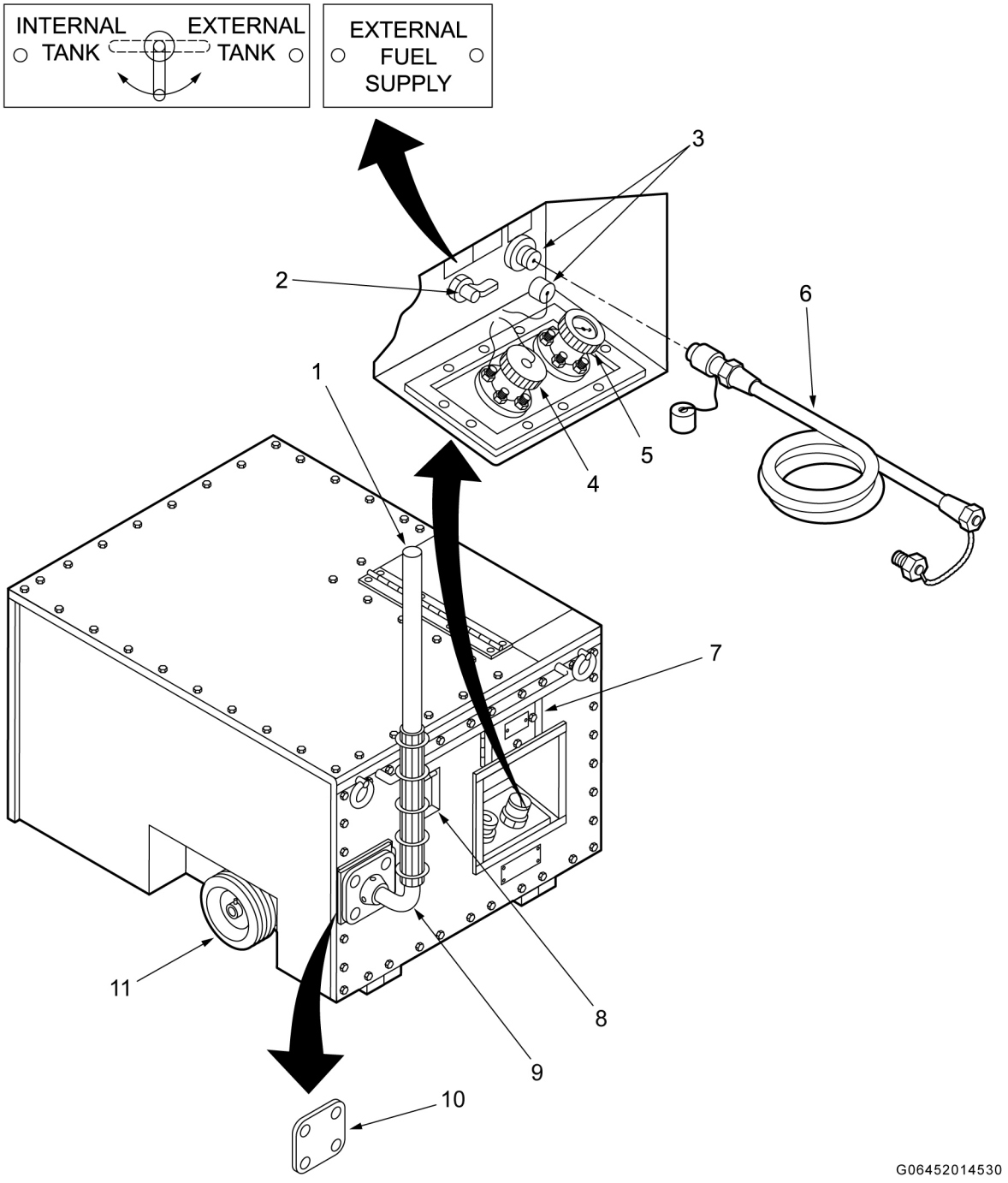


Figure 2. Rear and Left Side Components.

HEATER INTERIOR COMPONENTS

Circulating Fan Assembly

The circulating fan assembly (Figure 3, Item 1) is a "squirrel cage" fan that provides motive force for the air supply.

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

Motor

The motor (Figure 3, Item 2) drives the circulating fan assembly and fuel pump.

Fuel Pump

The fuel pump (Figure 3, Item 3) pulls fuel from the internal fuel tank or external fuel source, pressurizes it, and supplies fuel to the burner assembly.

Fuel Filter, Low Pressure

The low pressure fuel filter (Figure 3, Item 4) filters fuel to remove dirt and debris before it enters the pump.

Fuel Solenoid Valves

The fuel solenoid valves (Figure 3, Item 5) control the flow of fuel during operation.

Heat Exchanger

The heat exchanger (Figure 3, Item 6) consists of primary and secondary exchangers and the burner assembly, and provides the means for heating the supply air.

Transformer

The transformer (Figure 3, Item 7) provides the necessary voltage to the burner electrodes to ignite the fuel.

Combustion Air Fan Assembly

The combustion air fan assembly (Figure 3, Item 8) provides air to the burner assembly.

Fuel Tank

The fuel tank (Figure 3, Item 9) holds 14 gallons of fuel.

Combustor Control Relay Assembly

The combustor control relay assembly (Figure 3, Item 10) provides for safe operation/control of the burner assembly.

Air Pressure Switch

The air pressure switch (Figure 3, Item 11) detects air flow to the heat exchangers and allows power to reach the combustor control relay assembly.

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

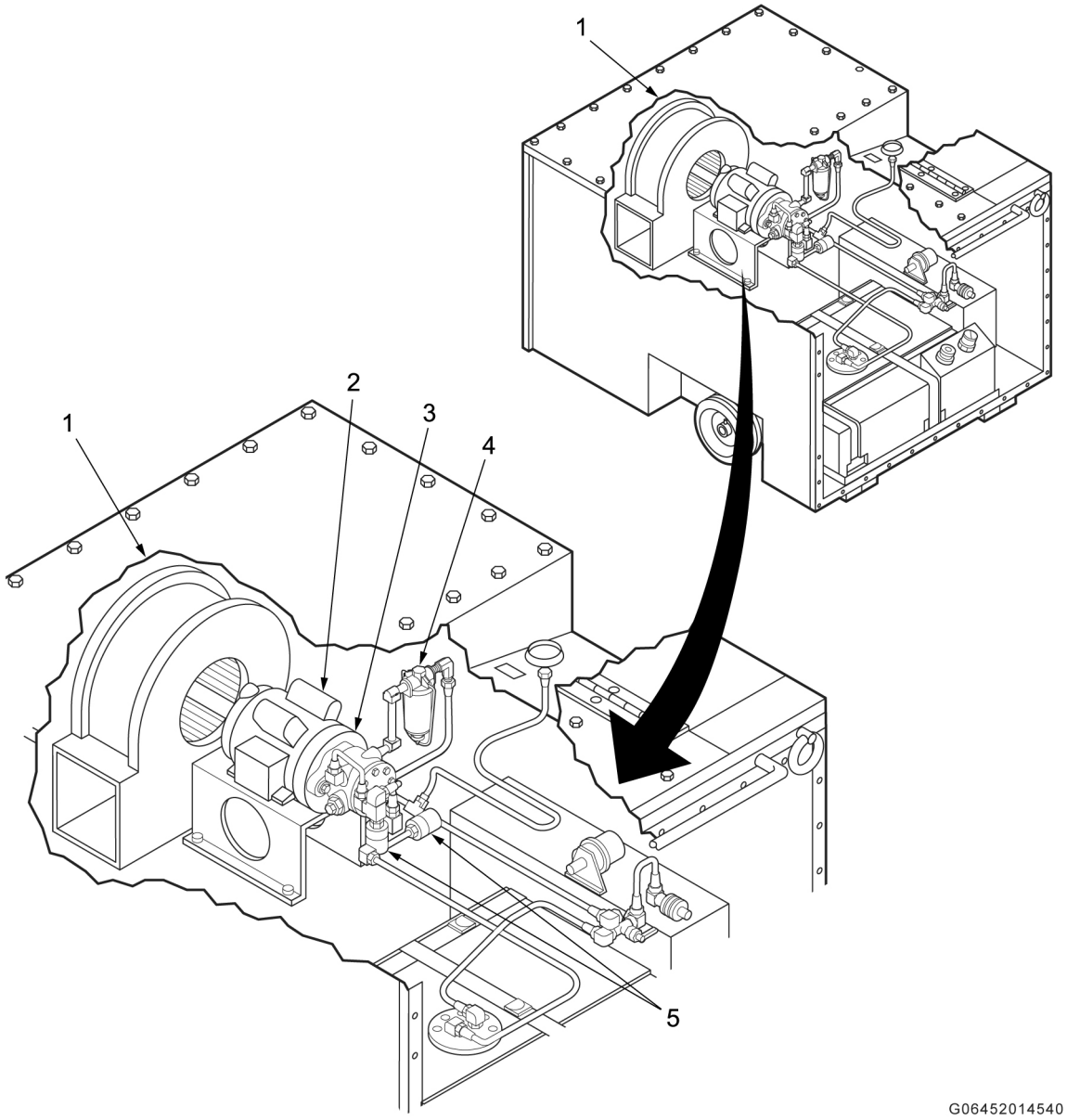


Figure 3. Heater Interior (Sheet 1 of 3).

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

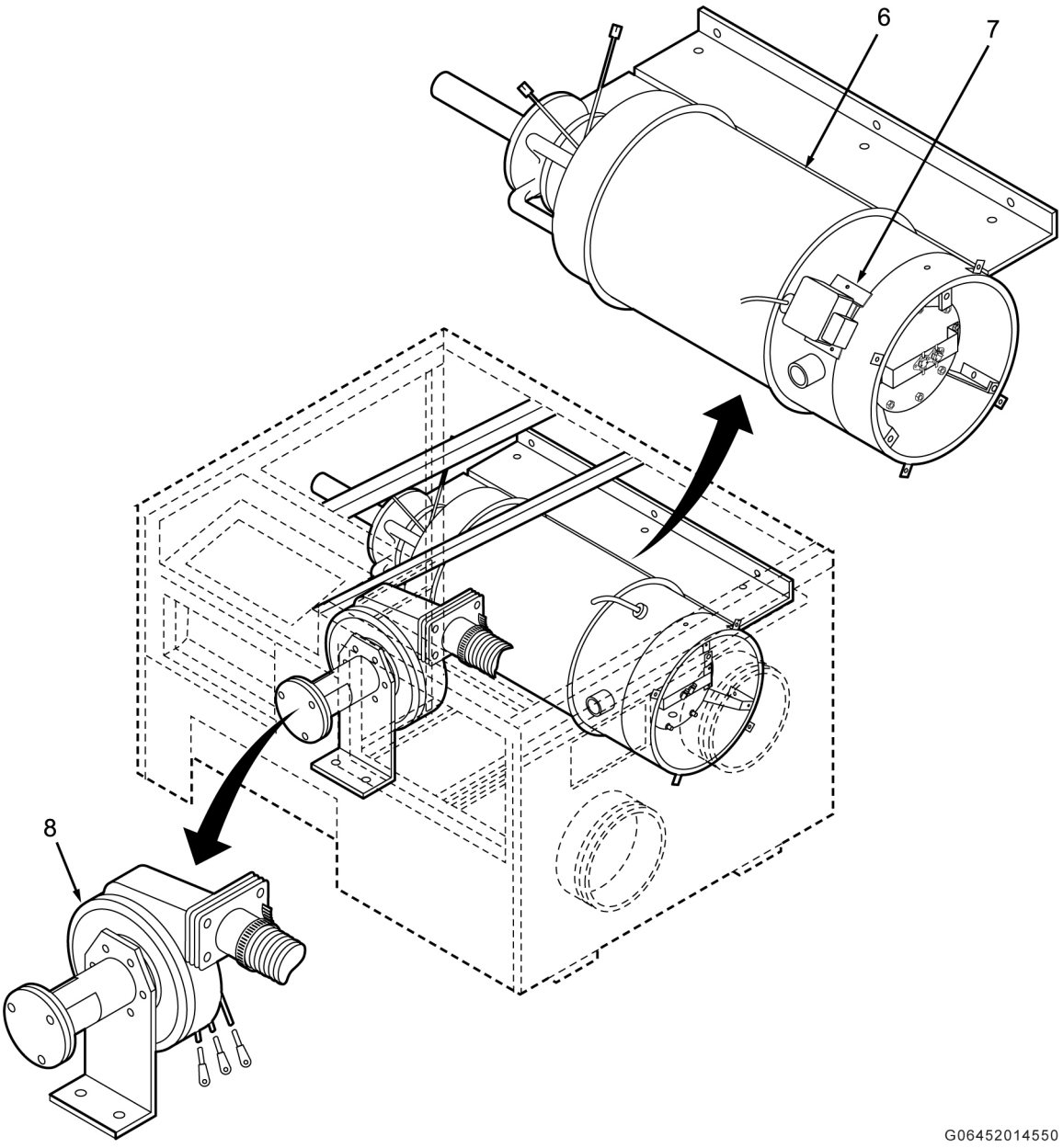


Figure 3. Heater Interior (Sheet 2 of 3).

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

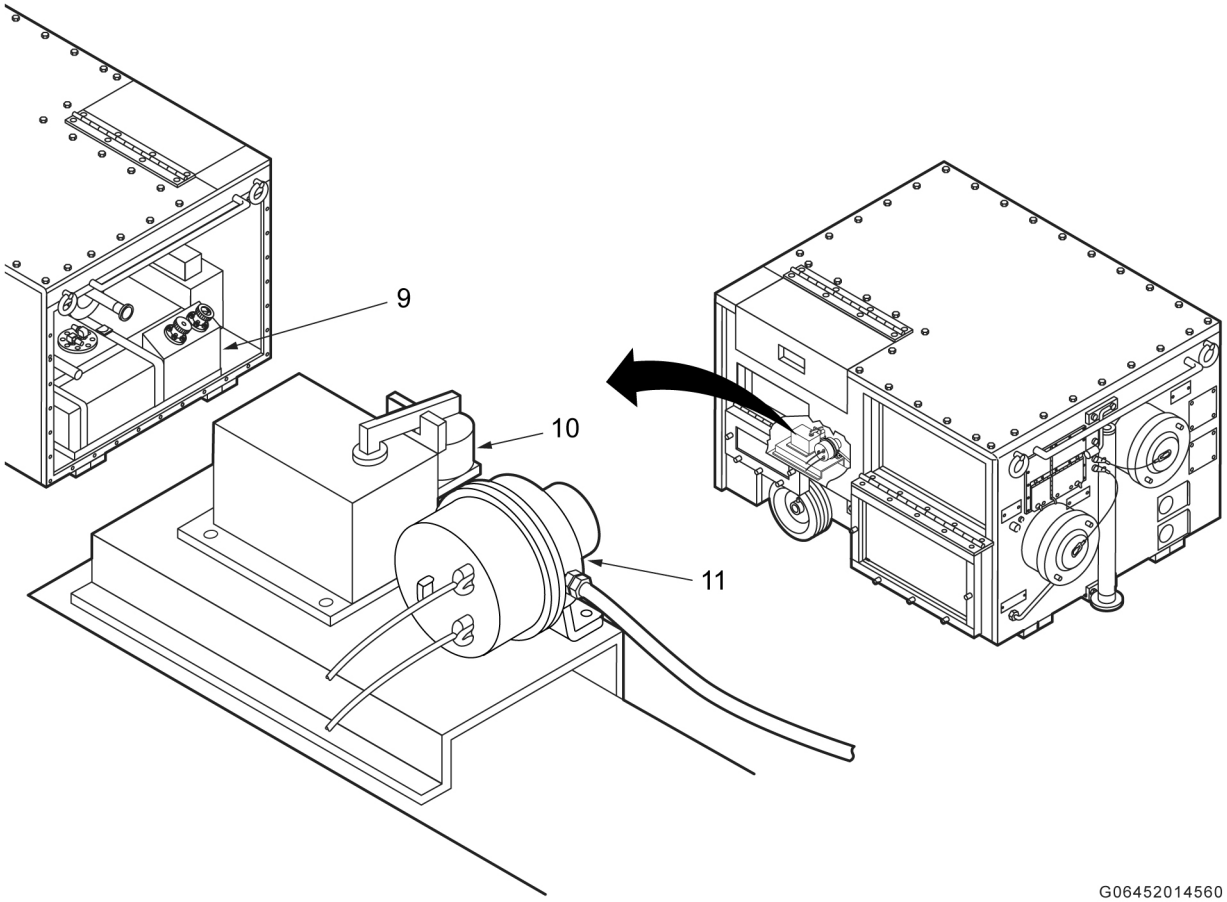


Figure 3. Heater Interior (Sheet 3 of 3).

EQUIPMENT DATA

Table 1 lists equipment data for the ASH. Table 2 lists types of fuel for the ASH. Table 3 lists fuel pressure settings for the ASH.

NOTE

Fuel pressures depend to a certain extent on the fuel being burned, ambient temperature, and elevation. The most economical ASH operation requires knowledge of application. Pressure settings in Table 3 allow the operator to become familiar with the ASH and its operation.

Equipment Specification Data

Table 1. Components, Dimensions, and Weights

EQUIPMENT	DATA
General Information	
Model	H-120
Part Number	60000-100
National Stock Number (NSN)	4520-01-367-2739
Model	H-120-1

EQUIPMENT DESCRIPTION AND DATA - (CONTINUED)

Part Number	60200-100
National Stock Number (NSN)	4520-01-439-1682
Dimensions	
Length	50.5 in (128.3 cm)
Width	40 in (101.6 cm)
Height	32 in (81.3 cm)
Diameter of Air Duct Connectors	12 in (30.5 cm)
Remote Thermostat Cable	25 ft (7.62 m)
Power Cable	25 ft (7.62 m)
Fuel Hose	25 ft (7.62 m)
Supply/Return Air Ducts	12 in diameter x 15 ft ((30.5 cm diameter x 4.57 m)
Weight	355 pounds (161 kg)
Operating Temperature Range	–40 to +65 °F (–40 to +18.3 °C)
Heating Capacity	140,000 BTU/hr at sea level, 120,000 BTU/hr at 4,000 ft (1,220 m) elevation.
Electrical Input	120 volts, 50/60 Hz, single-phase, grounded, 1200 watts (10 amps) in heating mode
Rated Air Flow	1000 cubic feet per minute (28.3 cubic meters per minute) at 0.5 iwg at sea level
Fuel Capacity	14 (53 L) gallon self-contained internal tank. Port provided for single hose external fuel supply.
Types of Fuel	See Table 2.
Fuel Pressure Settings for Variable Altitude and Frequency	See Table 3.

Table 2. Fuel Types

AMBIENT TEMPERATURE	SPECIFICATION	TYPE OF FUEL
Above +20 °F (–7 °C)	A-A-52557	Low Sulfur No. 2-D / DF-2
Above –25 °F (–32 °C)	A-A-52557	Low Sulfur No. 1-D / DF-1
Above –50 °F (–46 °C)	A-A-52557	Icing inhibitor added
Above –50 °F (–46 °C)	MIL-T-83133	JP-8

Table 3. Fuel Pressure Settings

	FUEL PRESSURE SETTING AT 60 Hz		FUEL PRESSURE SETTING AT 50 Hz	
	BELOW –20 °F (–29 °C)	ABOVE –20 °F (–29 °C)	BELOW –20 °F (–29 °C)	ABOVE –20 °F (–29 °C)
ELEVATION	PSI (kPA)	PSI (kPA)	PSI (kPA)	PSI (kPA)
Sea level to 1,500 ft (0 to 458 m)	120–130 (827–896)	110–125 (758–862)	110–120 (758–827)	100–115 (689–793)
1,500 ft to 3,000 ft (458 m to 914 m)	110–125 (758–862)	105–120 (724–827)	105–120 (724–827)	95–110 (655–758)
3,000 ft to 4,500 ft (914 m to 1,372 m)	105–120 (724–827)	100–115 (689–793)	100–110 (689–758)	90–105 (621–724)
4,500 ft to 6,000 ft (1,372 m to 1,829 m)	100–115 (689–793)	95–110 (655–758)	95–105 (655–724)	85–100 (586–689)

END OF WORK PACKAGE

OPERATOR INSTRUCTIONS

THEORY OF OPERATION

GENERAL INFORMATION

This section provides the principles of operation and functional description of the components comprising the ASH. Three systems comprise the heater: the electrical system, the fuel system, and the airflow system. These systems are described in the paragraphs below.

ELECTRICAL SYSTEM

The ASH Electrical System Schematic is shown in Figure 1. The electrical system provides three modes of operation: ventilation mode, automatic heating mode, and manual heating mode.

THEORY OF OPERATION - (CONTINUED)

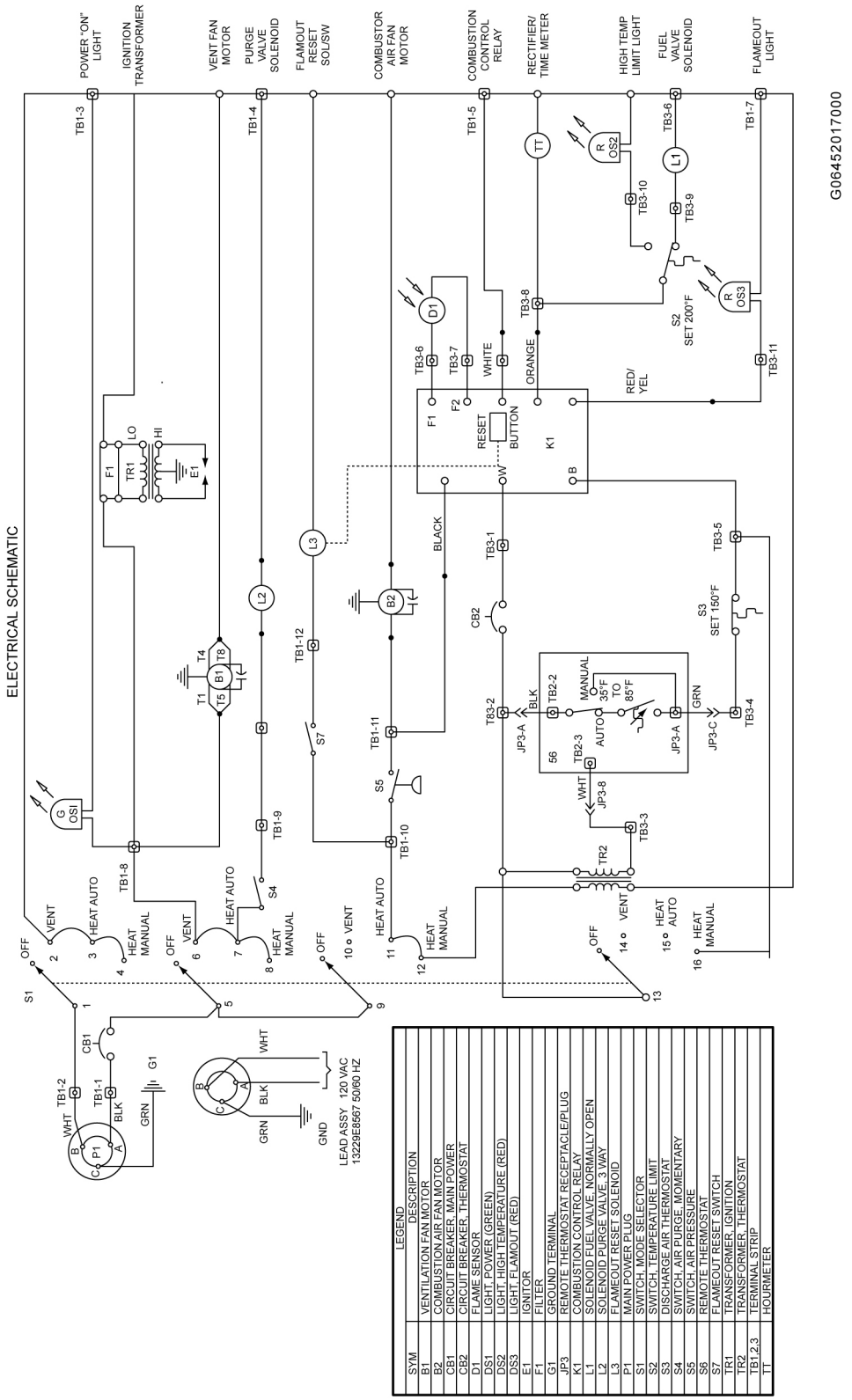


Figure 1. ASH Electrical System Schematic.

THEORY OF OPERATION - (CONTINUED)

Ventilation Mode

Initially, 120 VAC, 50/60 Hz, single-phase power is applied through the main power plug (P1) and main power circuit breaker (CB1) to the contacts of the mode selector switch (S1).

When the mode selector switch (S1) is placed in the VENT position, the power light (DS1) will illuminate. The circulating (ventilation) fan motor (B1) and the ignition transformer (TR1) also begin operating. Once the circulating fan motor (B1) is operating, pressure builds inside the enclosure, which closes the air pressure switch (S5). The air pressure switch (S5) must close to allow the combustion air fan motor (B2) to operate in automatic or manual heating modes (B2 does not operate in ventilation mode).

Power is also available at the air purge switch (S4). The air purge switch (S4) is used to purge air from the fuel system. S4 is spring-loaded to the OFF position; holding it in the ON position operates the 3-way purge solenoid valve (L2).

Heating Mode

Heating mode is initiated when the mode selector switch (S1) is set to HEAT AUTO or HEAT MANUAL. Continued operation of the chosen heating mode is dependent upon the combustion control relay (K1), its associated controls, and the setting of the remote thermostat. In addition to the 120 VAC 50/60 Hz power input (black lead) and the neutral (white lead), two input circuits and two output circuits are provided by the combustion control relay (K1). One input, the flame sensor circuit, includes safety devices. The other input, the thermostat circuit, includes temperature control devices and control relay contacts. Both the flame sensor and thermostat circuits must be completed to provide an output for the two-way fuel solenoid valve (L1). Functional descriptions of these circuits are contained below.

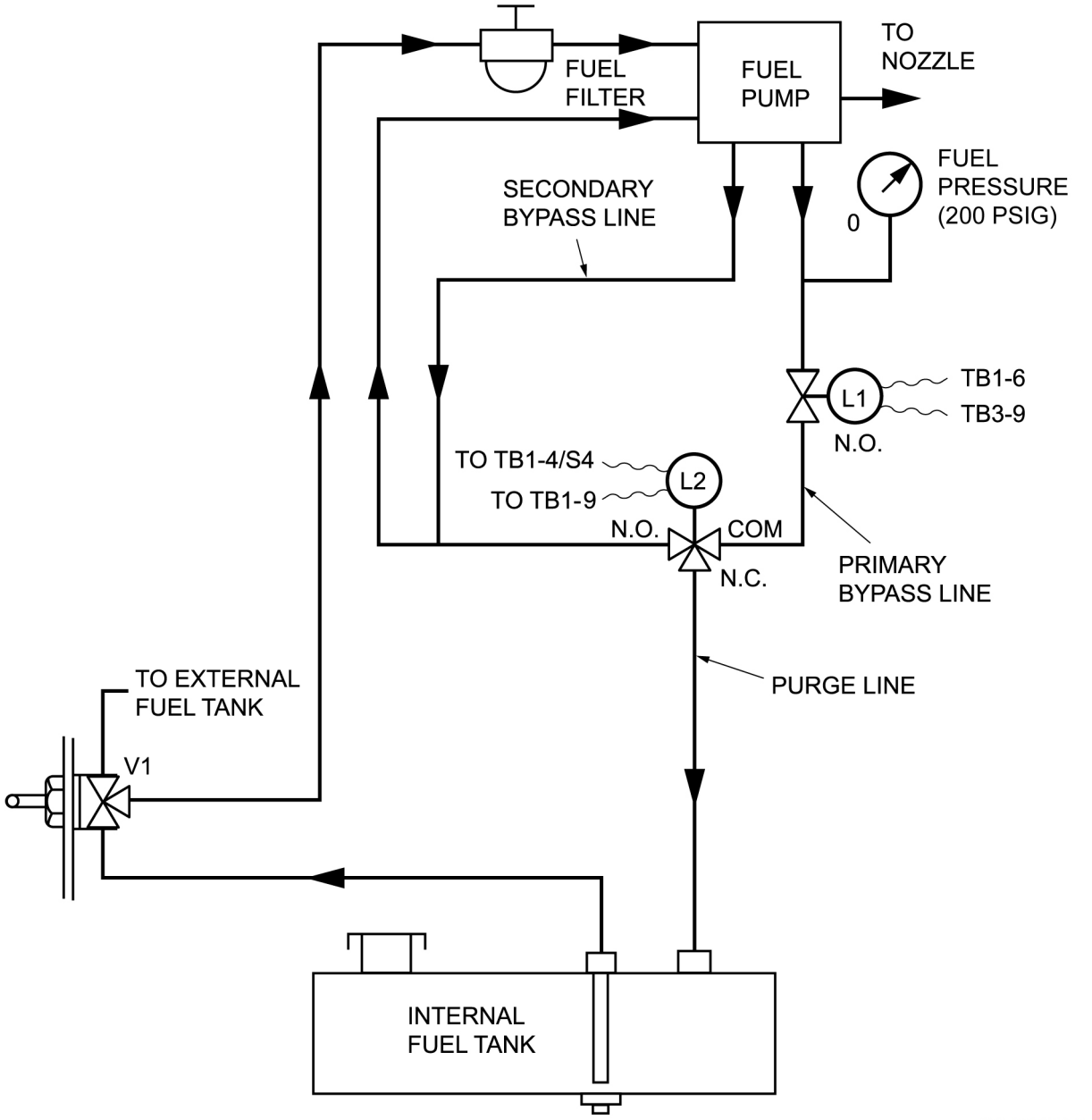
1. Flame Sensor Circuit. The components comprising the flame sensor circuit are the temperature limit switch (S2) and the flame sensor (D1).
   a. After depressing the flame reset button (S7), the flame sensor circuit will be overridden for approximately 10 to 13 seconds. During this time, if the temperature controller thermostat circuits are closed, power will be applied to the fuel solenoid valve (L1) through the combustion control relay (K1). When ignition occurs, the flame sensor (D1) will complete the flame sensor circuit.
   b. If the flame sensor circuit opens due to an overheat condition in the heat exchanger, a flameout, or lack of fuel, power will be removed from fuel solenoid valve (L1), and flameout light (DS3) will illuminate.
2. Temperature Controller Circuits. The components comprising the temperature control circuits are the discharge air thermostat (S3), the temperature limit switch (S2), and the remote thermostat (S6).
   a. When the mode selector switch (S1) is set to HEAT AUTO, the remote thermostat (S6) controls the ASH temperature output (between 35 and 85 °F (2 to 29 °C)). The burner will cycle to the temperature setting on the remote thermostat (S6) unless the output exceeds 160 °F (71 °C). When the temperature exceeds 160 °F (71 °C), the discharge air thermostat (S3) cycles the burner to OFF until the outlet temperature is below 130 °F (54 °C).
   b. While the ASH is still operating in auto heating mode, the remote thermostat (S6) can be placed on HI by depressing both of the control buttons (arrows) at the same time. The display screen on the remote thermostat (S6) will indicate HI. The burner will now burn continuously unless the outlet temperature exceeds 160 °F (71 °C). When this happens, the discharge air thermostat (S3) will again turn the burner OFF until the outlet temperature is below 130 °F (54 °C).
   c. When the ASH is set to HEAT MANUAL, the remote thermostat (S6) and the discharge air thermostat (S3) are bypassed and the burner attaching cables on continuously unless the outlet temperature exceeds 200 °F (93 °C), at which point the temperature limit switch (S2) shuts down the burner but the circulating air fan and the combustion air fan continue to operate. The high temperature light (DS2) will illuminate. The flame sensor (D1) will sense no flame and the flameout light (DS3) will illuminate.

THEORY OF OPERATION - (CONTINUED)

FUEL SYSTEM

The fuel system is illustrated schematically in Figure 2. The ASH contains a 14 gallon (53L) internal fuel tank. The fuel transfer valve (V1) enables operation of the heater from either the internal fuel tank or an external fuel source using a 25-foot (7.62 m) fuel hose.

THEORY OF OPERATION - (CONTINUED)



LEGEND:

L1 Solenoid Valve, 2 Way
L2 Solenoid Valve, 3 Way
V1 Valve, 3 Way, Manual
N.C. Normally Closed
N.O. Normally Open
COM Common Line
PSIG Pounds per Square Inch Gauge

Figure 2. Fuel System Schematic.

THEORY OF OPERATION - (CONTINUED)

Purge System

The purge system enables the operator to purge air from the fuel system upon startup of the heater. Purging is also required when operating from an external fuel source and after the fuel system has been allowed to run dry.

NOTE

Do not operate the ASH without fuel. Operation without fuel will result in damage to the fuel pump.

Never attempt to operate the ASH with the fuel selector valve handle in a vertical position. Fuel will not flow with the handle in the vertical position. The fuel selector valve handle must be in a horizontal position.

The internal tank may be serviced during purging if the external fuel source is used. Never purge the system on external tank when internal tank is full.

Priming the fuel system is accomplished by turning the mode selector switch (S1) to the VENT position and holding the air purge switch (S4) in the ON position until the fuel pressure gauge indicates a value greater than zero. When S4 is released, the pressure must be greater than 10 PSI (69 kPa).

If the pressure is below 10 PSI (69 kPa), purging must continue until the proper fuel pressure is obtained. Priming the fuel system at extremely low ambient temperatures with the correct fuel presents no problems, except that it takes slightly longer due to the greater restriction of cold fuel circulating through the filter.

The purge system can also be used to transfer fuel from an external source to the internal fuel tank. The external fuel hose must be attached to the external fuel supply connection, and the fuel transfer valve (V1) must be in the EXTERNAL TANK position. When the air purge switch (S4) is operated, the fuel passes through the pump to the 3-way purge solenoid valve (L2) to the purge line and into the internal fuel tank. Do not overfill the tank.

Ventilation Mode

In ventilation mode, fuel is drawn through the fuel filter by the fuel pump. The fuel is then pumped through the two-way fuel solenoid valve (L1), to the 3-way purge solenoid valve (L2). Since L2 is not energized, the fuel passes through the normally open (N.O.) position of L2 and returns to the inlet side of the fuel pump. If L2 is energized, the ASH will operate as described in the Purge System paragraph above.

Heating Mode

In heating mode, fuel flow is the same as during ventilation mode. Upon heat demand, fuel solenoid valve (L1) closes and fuel is supplied to the nozzle at the set pressure. Unused fuel is bypassed back to the pump through the secondary bypass line. When the desired air temperature is reached, the temperature limit switch (S2) activates, or the safety relay (K1) activates, L1 opens. When L1 is open, all fuel will return to the pump through the primary bypass line.

Additional Components of the Fuel System

The fuel tank drain provides a means to drain the tank when required.

The fuel tank gauge mechanically indicates the level of fuel in the internal fuel tank.

The fuel filler neck provides a means to service the fuel tank with fuel. A fuel strainer is located inside the neck to trap foreign objects before they enter the tank. The screen can be removed and cleaned for reuse.

The fuel pressure gauge indicates purge, recirculate, and heat fuel pressures.

AIRFLOW SYSTEM

The airflow system (Figure 3) provides two separate airflows: circulating airflow and combustion airflow.

THEORY OF OPERATION - (CONTINUED)

Circulating airflow is provided by the circulating air fan. Circulating air is either ventilated (ambient) or heated.

Combustion airflow is provided by the combustion air fan. Combustion airflow is applied to the burner, mixed with vaporized fuel, and ignited. The resulting hot gases pass through the heat exchanger and exit as exhaust through the exhaust pipe.

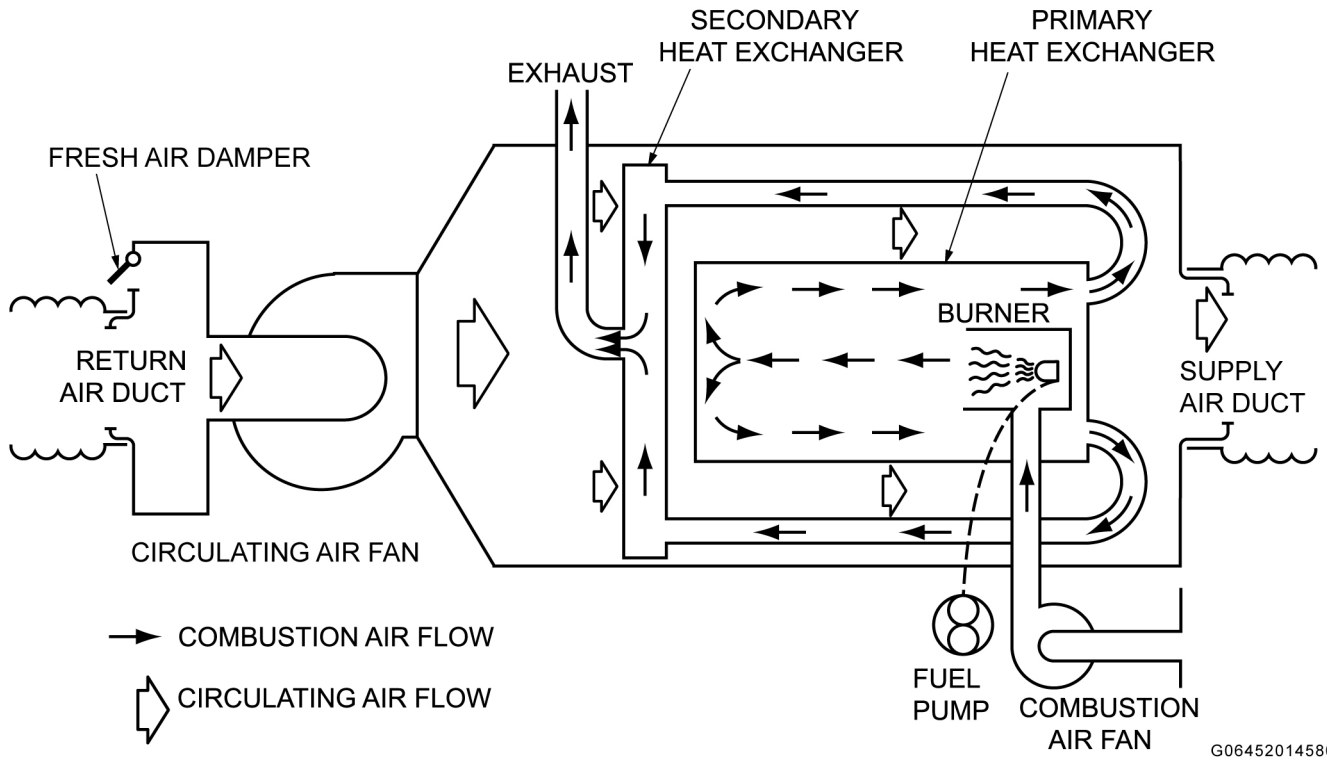


Figure 3. ASH Airflow Schematic.

Ventilation Mode

In ventilation mode, ventilated air is drawn through the return air duct and/or the fresh air damper by the circulating air fan. The ASH enclosure becomes pressurized and the air moves first around the secondary heat exchanger, then through the primary heat exchanger. From the primary heat exchanger, the air is discharged through the supply air duct.

Heating Mode

The airflow in heating mode is identical to that described for ventilation mode, except that the air passing over the heat exchanger is heated by the heat exchanger as required by either the remote thermostat (automatic heating mode) or the discharge air thermostat (manual heating mode).

END OF WORK PACKAGE

CHAPTER 2

OPERATOR INSTRUCTIONS

FOR

ARMY SPACE HEATER H-120, H-120-1

OPERATOR INSTRUCTIONS

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

INTRODUCTION

This section contains illustrations that show the location of each control and indicator for operation of the ASH. Each control and indicator is clearly labeled as it appears on the equipment. The numbers on the illustration are keyed to the tabular listing which contains the name, based on the panel markings, and the functional description of each control and indicator.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS - (CONTINUED)

Table 1. ASH Front And Right Side Controls And Indicators

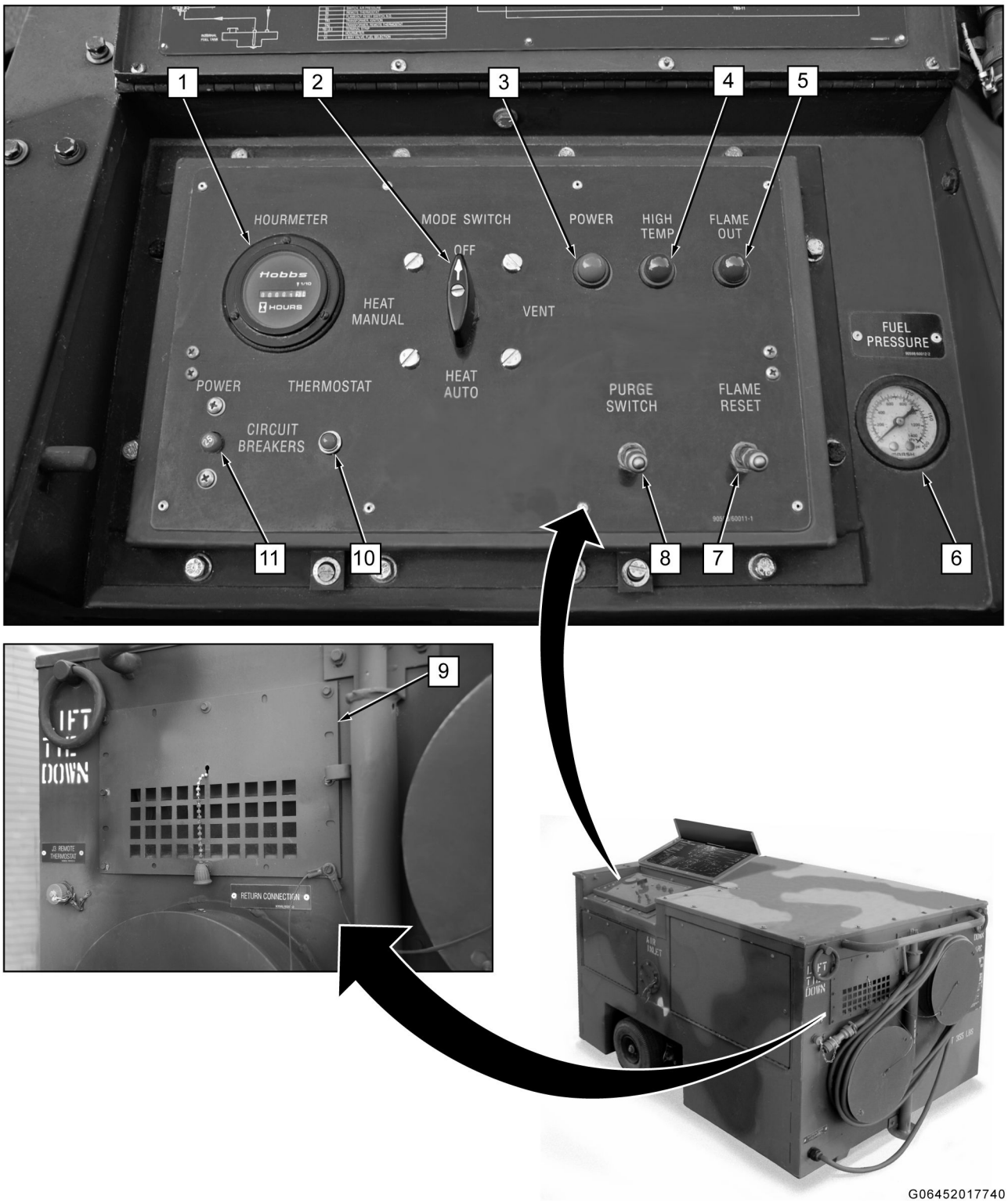


Figure 1. ASH Front and Right Side Controls and Indicators.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS - (CONTINUED)

KEY	CONTROL/INDICATOR	FUNCTION
1	Hourmeter	Indicates the total number of hours the burner has been operated.
2	Mode Switch	Used to place the heater unit in ventilation mode (VENT), auto heating mode (HEAT AUTO), manual heating mode (HEAT MANUAL), or OFF mode.
3	Power Light	Illuminates when power to the heater is available, the power circuit breaker is set, and the mode switch is set to the VENT, HEAT AUTO, or HEAT MANUAL position.
4	High Temp Indicator	Illuminates any time the heater discharge air exceeds the limit of the temperature limit switch setting.
5	Flame Out Indicator	Illuminates any time there is a burner flame out during operation in heating mode.
6	Fuel Pressure Gauge	Provides a constant indication of the fuel system pressure (in PSI and kilopascals) of the fuel pump output.
7	Flame Reset Switch	Resets combustion control relay K1.
8	Purge Switch	Purges air from fuel system.
9	Damper	Allows fresh air to enter the ASH's supply air system.
10	Thermostat Circuit Breaker	Trips whenever an overcurrent condition exists with the remote thermostat circuit. Must be manually reset by pushing in.
11	Power On Circuit Breaker	Protects the electrical circuits whenever an overcurrent condition exists within the heater unit. Must be manually reset by pushing in.

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS - (CONTINUED)

Table 2. ASH Rear And Left Side Controls And Indicators

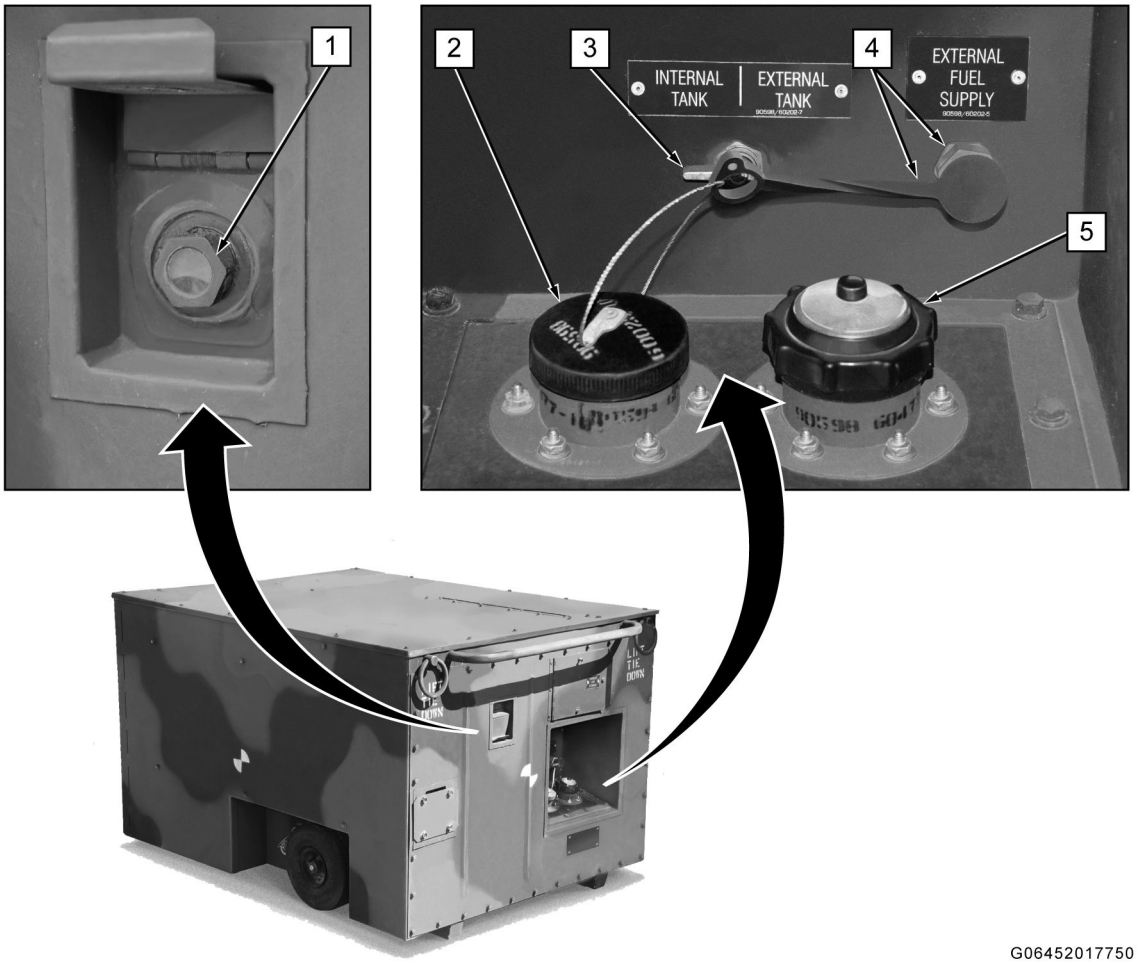


Figure 2. ASH Rear and Left Side Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	Sight Glass	Allows visual verification of ignition or burner operation.
2	Fuel Filler Neck and Cap	Allows the internal fuel tank to be serviced with fuel when the cap is removed.
3	Internal Tank/External Tank Selector Valve	Selects either the internal fuel tank or the external fuel source (if connected).
4	External Fuel Supply Connection	Connects the external fuel source to the ASH.
5	Fuel Gauge	Provides a continuous indication of the internal tank fuel level.

END OF WORK PACKAGE

OPERATOR INSTRUCTIONS

OPERATION UNDER USUAL CONDITIONS

INITIAL SETUP:

Personnel Required FM 10-67-1
General Purpose User, GPU - (1)

References
WP 0013

SITING REQUIREMENTS

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

1. Location
   a. Locate the ASH approximately 7 feet (2.14 m) from the shelter, about midway between the shelter supply and return air connections.
   b. The heater duct openings must be facing the shelter connections.
   c. The power source must be located within 25 feet (7.62 m) of the ASH.

CAUTION

Use only one external fuel hose (25 feet (7.62 m)) when connecting to external fuel source or damage to circulating air fan motor and fuel pump may result.

   d. The external fuel source must be located within 25 feet (7.62 m) of the ASH.
2. Terrain

WARNING

Use care when using the jack assembly or when raising or lowering the wheel assemblies. Fingers or hands may be pinched causing injury to personnel.

CAUTION

Do not set up the ASH on extremely unlevel (greater than 10 degrees from true horizontal position) terrain. Doing so may result in improper operation or damage to equipment.

   a. The wheel assemblies should be in the stowed position. Raise the front of the ASH with the attached jack and remove the wheel pin and move the wheels up toward the rear of the ASH. Lower the front end.
   b. The terrain should be as level as possible. Level the ASH by adjusting the front of the ASH with the attached jack so it does not exceed 10-degree incline.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

c. The area in front of the ASH must be clear of objects that would interfere with proper positioning of the air ducts.
d. The area around and above (6 ft (1.83 m) from ground level) the exhaust pipe must be clear of obstacles.
e. The area of the right side of unit must allow access by the operator to operate the controls on the control panel and allow a clear path for air flow to the combustion fan air inlet.

WARNING

Fuel is toxic and flammable, it can cause injury to personnel and damage to equipment. Improper positioning of the external fuel source can cause the internal fuel tank to overflow. Properly position external fuel source.

f. The terrain for the external fuel source should be as level as possible. The external fuel source must be placed not lower than 12 inches (30.5 cm) below base of heater and not higher than 10 feet (3 m) above the heater.

END OF TASK

ASSEMBLY AND PREPARATION FOR USE

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

General Precautions

1. Ensure that the air duct covers and combustion air inlet cover are removed prior to operation.
2. Perform PMCS for Operators (WP 0013). Notify field maintenance if any discrepancies are found.

END OF TASK

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

FUEL TANK SELECTION

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

CAUTION

Never attempt to operate the ASH with the fuel selector valve handle in a vertical position. Damage will occur. Fuel will not flow with the handle in the vertical position. The fuel selector valve handle must be in a horizontal position.

1. Check fuel gauge (Figure 1, Item 1) and service internal fuel tank as required.
2. Set the fuel selector valve (Figure 1, Item 2) to the INTERNAL TANK position.
3. If the external fuel line (Figure 1, Item 3) is attached to the unit external fuel connection (Figure 1, Item 4) and a fuel source, set fuel selector valve (Figure 1, Item 2) to the EXTERNAL TANK position.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

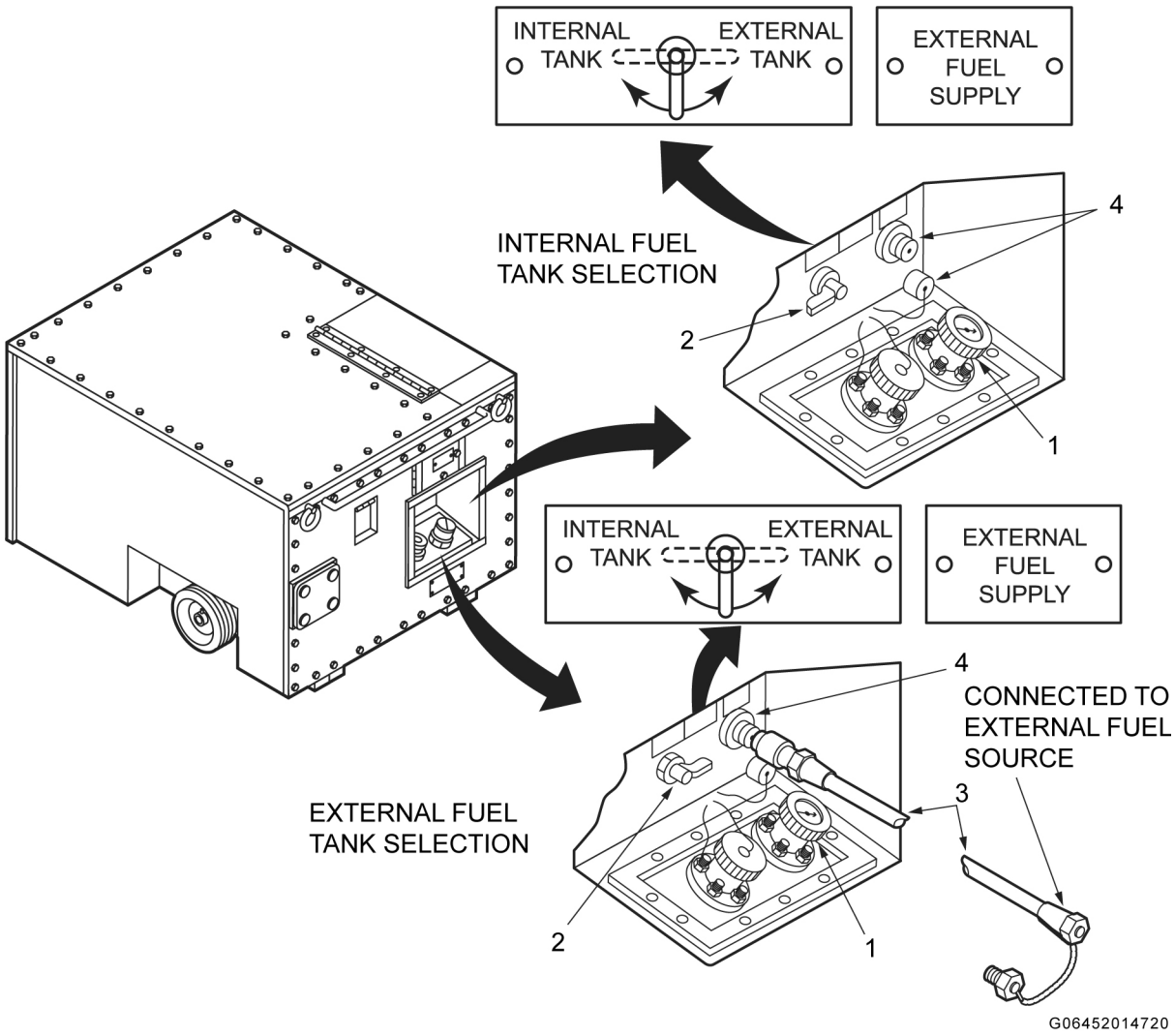


Figure 1. Fuel Tank Selection.

END OF TASK

FUELING

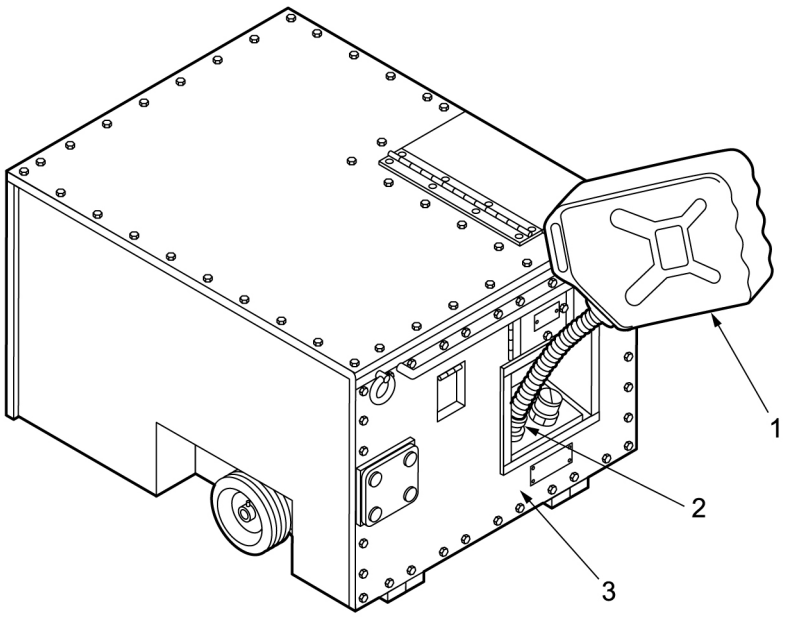
1. Remove fuel cap(Figure 2, Item 3).
2. Provide metal-to-metal contact between fuel tank (Figure 2, Item 2) and dispenser (Figure 2, Item 1) to avoid possibility of sparks. A grounding cable, bonding strap, or equivalent may be used.

NOTE

If diesel fuel is not available, turbine fuel conforming to MIL-T-83133 maybe used as an alternate. However, greater heating efficiency will be obtained using one of the diesel fuels recommended in step 3.

3. Fill fuel tank with 14 gallons (53 L) of fuel, with fuel choice depending upon ambient temperature (WP 0002, Table 2).

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)



G06452014730

Figure 2. Fueling the ASH.

END OF TASK

POWER CONNECTION

1. Ensure that the MODE SWITCH (Figure 3, Item 3) is in the OFF position.
2. Connect heater power cable (Figure 3, Item 5) to power cable adapter (Figure 3, Item 4).
3. Depress POWER circuit breaker (Figure 3, Item 1) and THERMOSTAT circuit breaker (Figure 3, Item 2) buttons.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

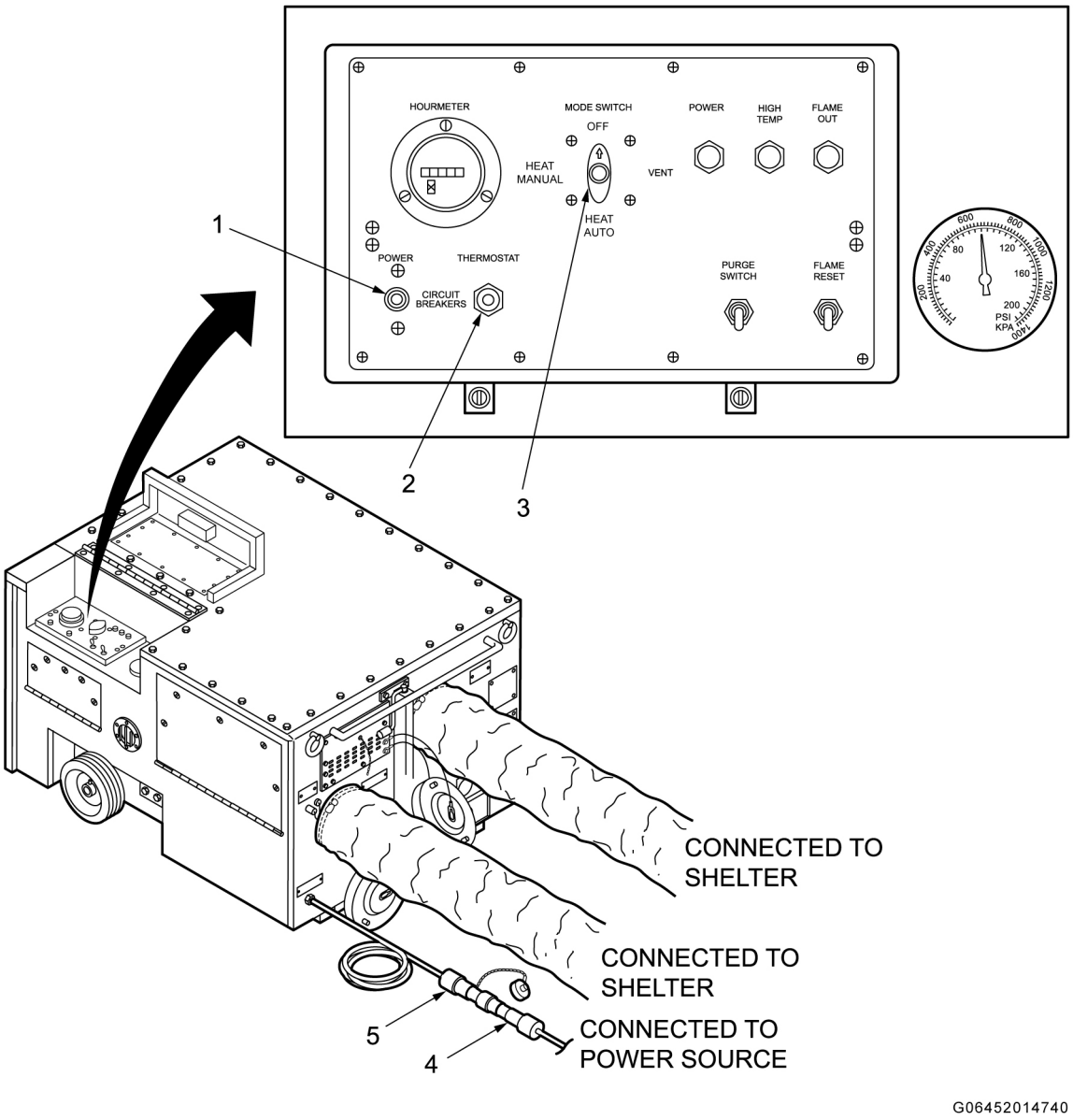


Figure 3. Power Connection.

END OF TASK

OPERATING PROCEDURES

Ventilation Mode

1. Perform Assembly and Preparation for Use procedures above.
2. Operate 120 VAC, 50/60 Hz power source as applicable.

CAUTION

Do not operate the ASH without fuel. Operation without fuel will result in damage to fuel pump.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

Never attempt to operate the ASH with the fuel selector valve handle in a vertical position. Fuel will not flow with the handle in the vertical position. The fuel selector valve handle must be in a horizontal position.

a. Set the MODE SWITCH (Figure 4, Item 1) to the VENT position. The circulating air motor/fan should begin operating immediately.
b. Push the fuel PURGE SWITCH (Figure 4, Item 2) upward to ON position for 10 seconds to purge air from the fuel lines. Fuel pressure gauge (Figure 4, Item 3) indication will drop while switch (Figure 4, Item 2) is in ON position and return to approximately 20 PSI (138 kPa) when released.
c. Adjust the fresh air damper (Figure 4, Item 5) for the desired amount of fresh air by releasing the chain (Figure 4, Item 4) and allowing it to feed into the damper assembly.

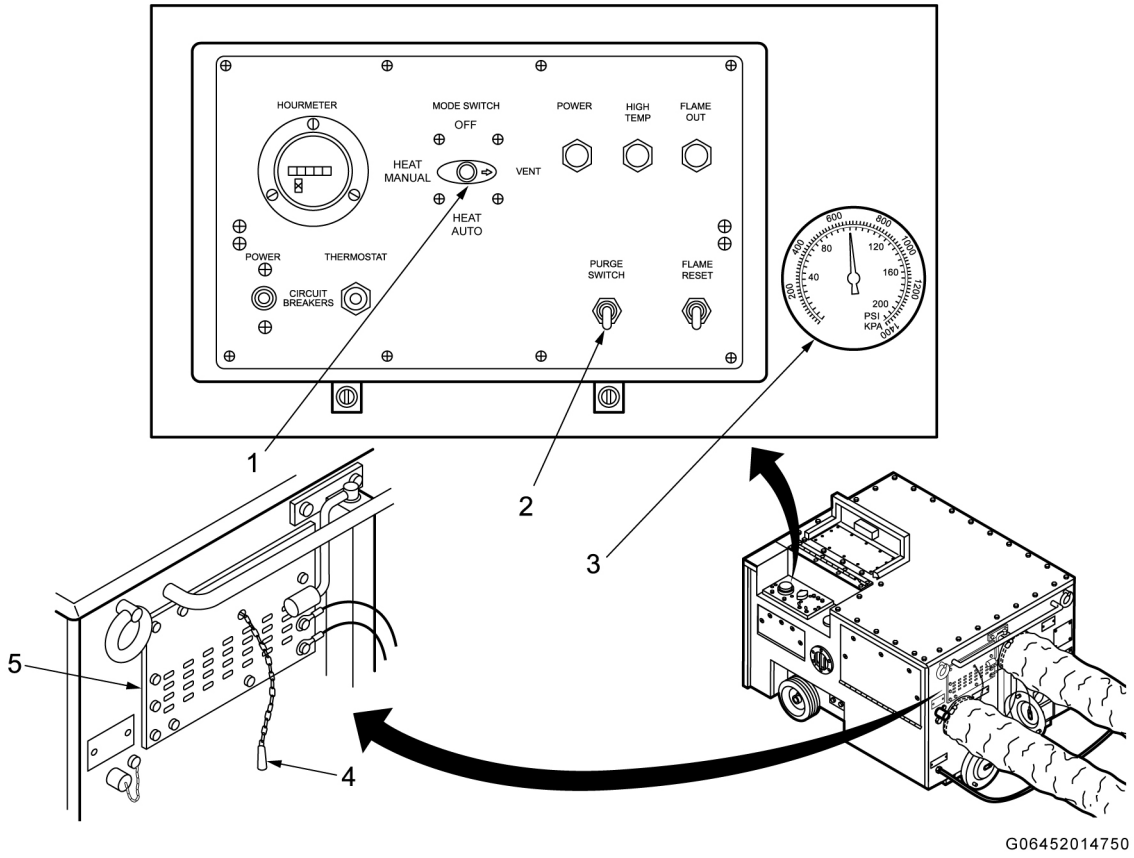


Figure 4. Operation, Ventilation Mode.

Auto Heating Mode (MODE SWITCH set to HEAT AUTO)

CAUTION

Do not attempt to operate the heater unit in the heating mode for more than 10 minutes when ambient temperature is above 100 °F (38 °C). Failure to comply may result in damage to equipment. Operation in ventilation mode may be done at any temperature.

1. Perform Assembly and Preparation for Use procedures above in this work package.
2. Operate the ASH in ventilation mode by following the instructions above in this work package.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

CAUTION

Do not operate the ASH in auto heating mode if ignition arc is not present. Damage to equipment may result.

3. Look through the sight glass (Figure 5, Item 2) to check for ignition arc. If ignition arc is not seen, do not attempt to fire heater. The arc should be steady and bright blue in color.

NOTE

If the ambient air temperature is below 0 °F (-17.8 °C), wait 30 to 45 seconds prior to performing step (4).

If the burner does not ignite within 15 seconds after mode switch is set to the HEAT AUTO position or if the burner goes out during heating mode, the FLAME OUT light will come on.

4. Set the mode switch (Figure 5, Item 1) to the HEAT AUTO position.
   a. If the FLAME OUT light (Figure 5, Item 3) comes on wait 30 seconds and depress the FLAME RESET button (Figure 5, Item 5).
   b. If FLAME OUT light comes on after three attempts to reset, notify field maintenance.
5. Set remote thermostat (Figure 5, Item 8) at least 3 °F above ambient temperature. Depress the up arrow (Figure 5, Item 7) to increase setting or the down arrow (Figure 5, Item 6) to decrease setting.
6. Check fuel pressure at the fuel pressure gauge (Figure 5, Item 4). Proper pressure for elevation/ambient temperature and voltage frequency (50 or 60 Hz) is listed in WP 0002, Table 3. If pressure is not correct, notify field maintenance.
7. After the burner lights up, observe the flame through the sight glass (Figure 5, Item 2). If flame is not bright and steady, notify field maintenance to adjust the fuel pressure.
8. Adjust the fresh air damper (Figure 5, Item 10) for the desired amount of fresh air by releasing the chain (Figure 5, Item 9) and allowing it to feed into the damper assembly.
9. Adjust the temperature of the area being heated by depressing one of the arrows on the thermostat (Figure 5, Item 8).

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

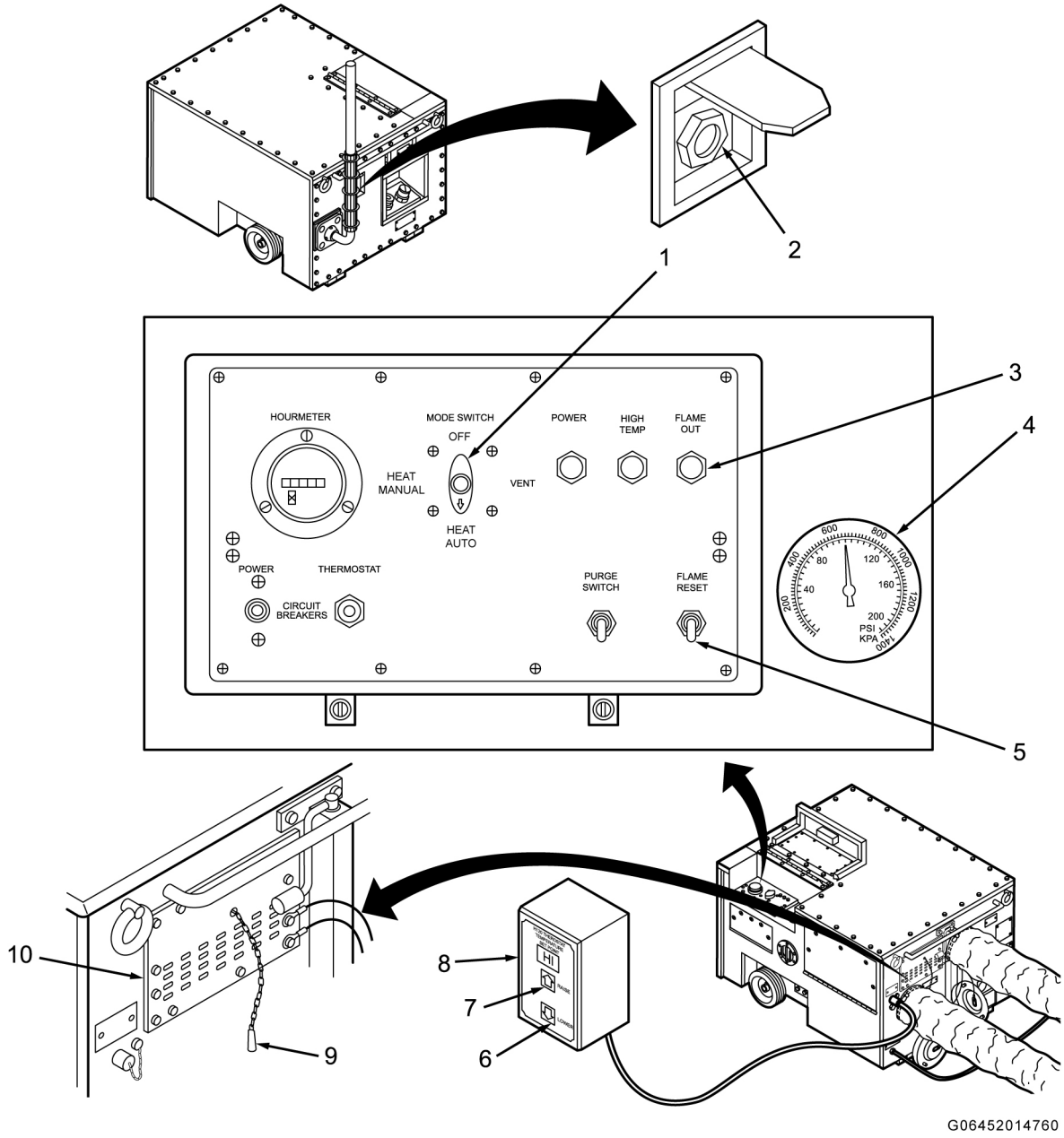


Figure 5. Operation, Auto Heating Mode.

10. The ASH may be placed in HI temperature mode to deliver heated air up to 150 °F (65 °C) as follows:
    a. Follow the procedures in Steps 1 through 8 above for operation in auto heating mode.

NOTE

HI temperature mode cannot be obtained in manual heating mode.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

b. Once the ASH burner lights up and the fuel pressure is correct, the ASH may be placed in HI heat mode by depressing arrows (Figure 6, Item 1) and (Figure 6, Item 2) on the remote thermostat (Figure 6, Item 3) at the same time.
c. The remote thermostat (Figure 6, Item 3) will indicate HI. The ambient temperature will not affect the heater operation.
d. The ASH may be returned to auto heating mode by depressing arrows (Figure 6, Item 1) and (Figure 6, Item 2) together a second time.

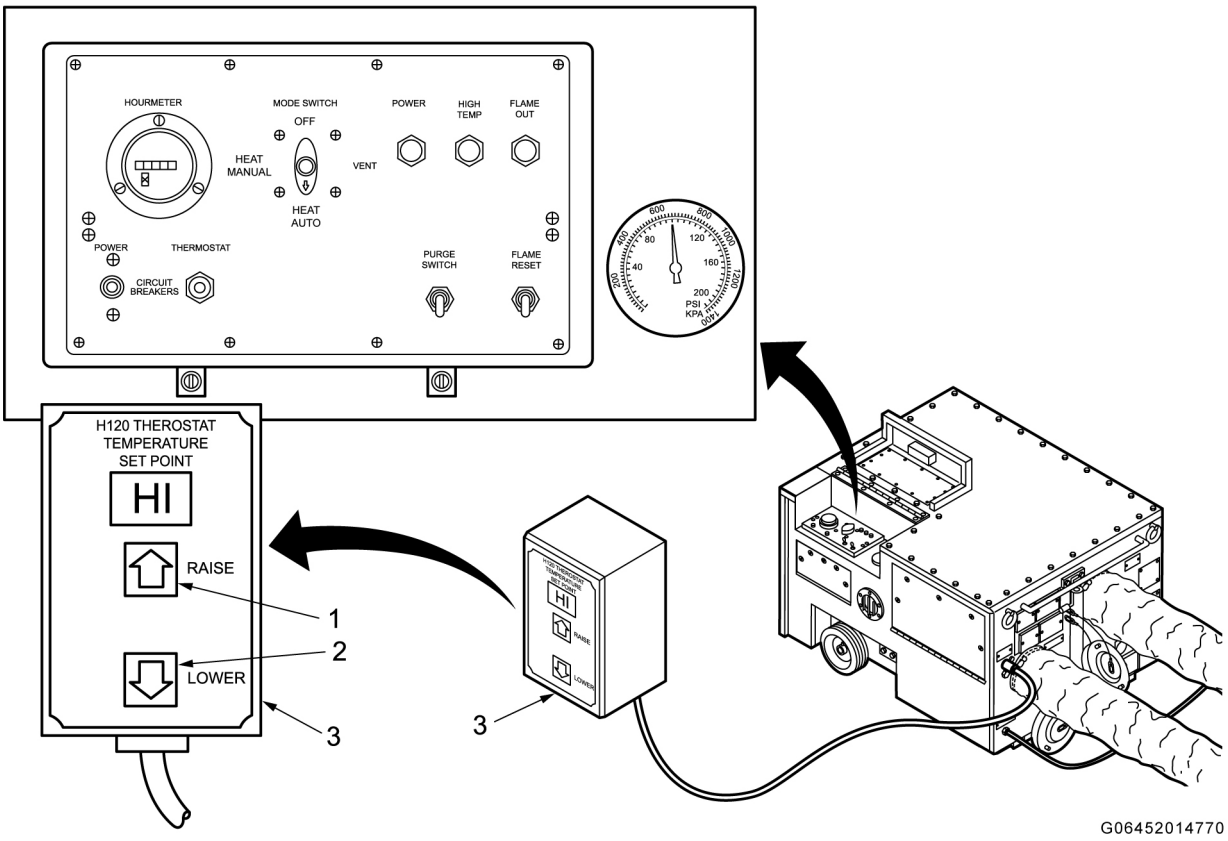


Figure 6. Operation, Auto Heating Mode, HI Temperature.

Manual Heating Mode (MODE SWITCH set to HEAT MANUAL)

CAUTION

Do not attempt to operate the heater unit in manual heating mode for more than 10 minutes when the ambient temperature is above 100 °F (38 °C). Failure to comply may result in damage to equipment. Operation in ventilation mode is allowed at any temperature.

NOTE

If unit is presently operating in auto heating mode, proceed to step 4.

1. Perform the setup procedures in Assembly and Preparation for Use section above in this work package.
2. Operate the ASH in ventilation mode by following the instructions in the Ventilation Mode section above.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

CAUTION

Do not attempt to operate the heater in manual heating mode if the ignition arc is not present. Damage to equipment may occur.

3. Look through the sight glass (Figure 7, Item 1) to check for ignition arc. If ignition arc is not seen, do not attempt to fire heater.
4. Set MODE SWITCH (Figure 7, Item 3) to the HEAT MANUAL position.
5. Look through sight glass (Figure 7, Item 1) and ensure flame is present. If flame is not bright and steady, notify field maintenance.
6. Check fuel pressure at the fuel pressure gauge (Figure 7, Item 2). Proper pressure for elevation and voltage frequency (50 or 60 Hz) is listed in Table 3, WP 0002. If pressure is not correct, notify field maintenance.

NOTE

If the ambient air temperature is below 0 °F (-17 °C), then wait 30-45 seconds prior to performing Shutdown procedure below.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

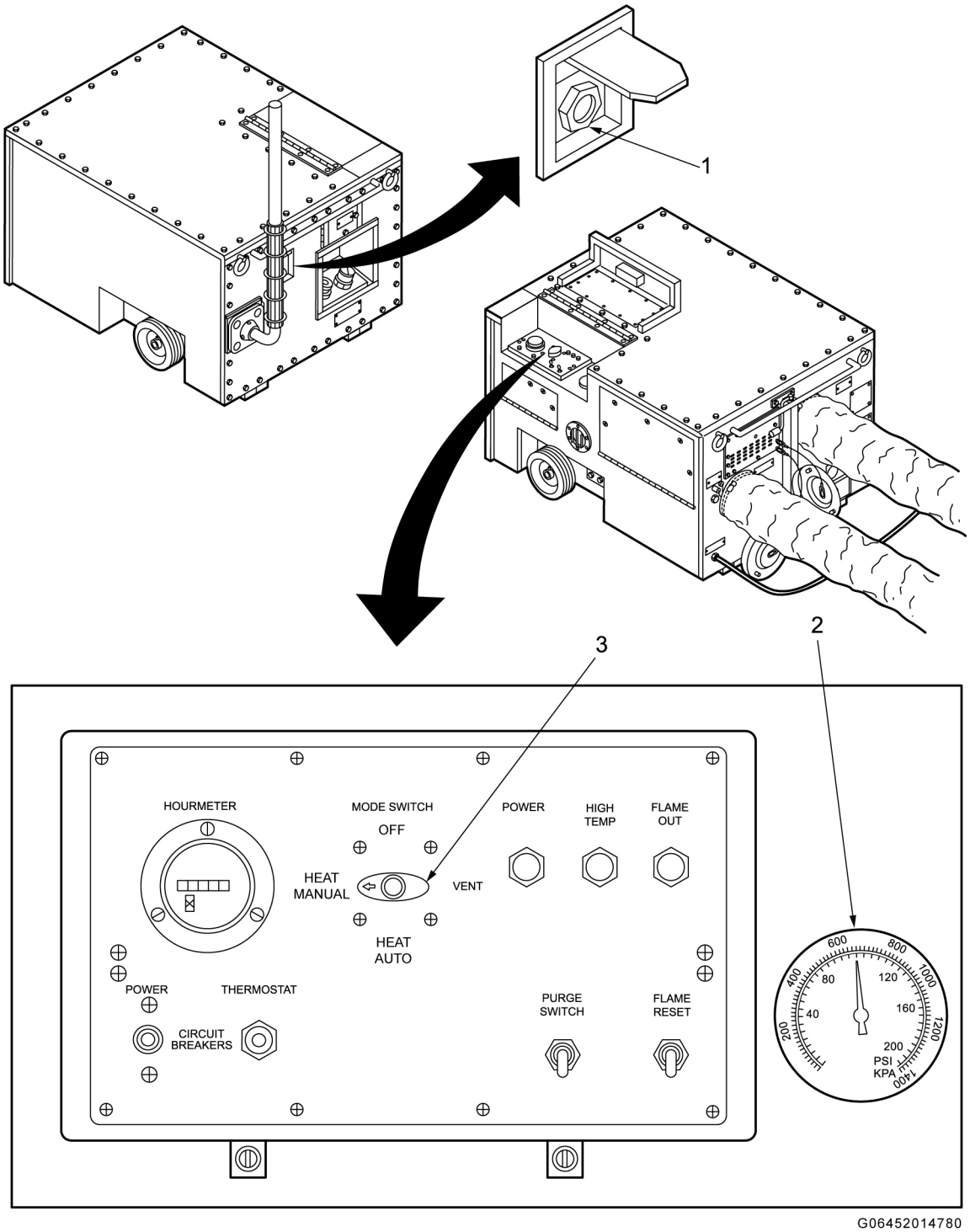


Figure 7. Operation, Manual Heating Mode.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

Shutdown

WARNING

Heat exchanger overheating may damage the ASH, and under some conditions, a safety hazard may result. An overheat shutdown occurs when the combustion air and circulating air fan assemblies are turned off at the same time when in the heating modes. Always set the mode selector switch to the VENT position for at least 2 minutes when shutting down the ASH from the heating modes.

1. Set the MODE SWITCH (Figure 8, Item 1) to the VENT position for at least two minutes.
2. Set the MODE SWITCH (Figure 8, Item 1) to the OFF position to shut down the ASH.
3. Install combustion air inlet cover (Figure 8, Item 3) on combustion air inlet (Figure 8, Item 2), and the return air duct cover (Figure 8, Item 4) if the return air duct (Figure 8, Item 6) was not attached.
4. Disconnect heater power cable (Figure 8, Item 5) from power source.

OPERATION UNDER USUAL CONDITIONS - (CONTINUED)

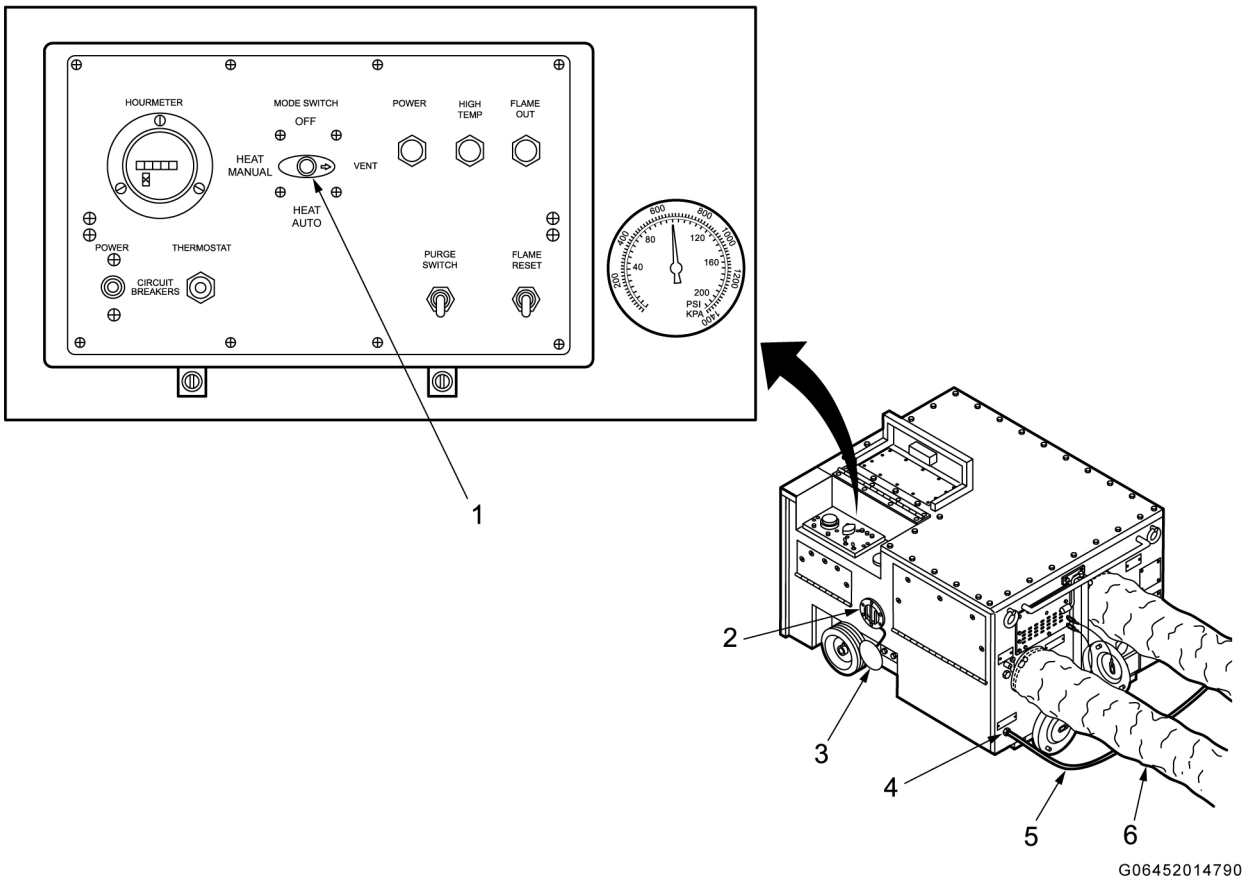


Figure 8. Shutdown.

END OF TASK

END OF WORK PACKAGE

OPERATOR INSTRUCTIONS

OPERATION UNDER UNUSUAL CONDITIONS AND ENVIRONMENTS

INITIAL SETUP:

Tools and Special Tools
Gloves, Heat Protective (WP 0116, Item 5)

References
WP 0005

Personnel Required
General Purpose User, GPU - (1)

UNUSUAL ENVIRONMENT/WEATHER CONDITIONS

Operating in Extreme Cold

WARNING

Touching cold metal with exposed skin will cause skin to bond to metal. Gloves are required when touching cold metal objects. Do not touch cold metal parts with bare hands. Frostbite can cause permanent injury.

1. Be careful when handling the air duct assemblies to avoid cracking the ducts.
2. Always keep protective covers on the ASH when not in use.
3. Perform operating procedures according to WP 0005.

Operating in Extreme Heat

1. Do not operate in heating modes for more than 10 minutes when ambient temperature is above 100 °F (38 °C).
2. Perform operating procedures according to WP 0005.

Operating in Strong Winds

1. Strong winds should not affect ASH performance.
2. Perform operating procedures according to WP 0005.

Operating in Sand or Dust

1. Remove any sand or dust from the air inlet openings before installing the ducts or operating the combustion motor.
2. Keep the protective covers installed when not in use.
3. Perform operating procedures according to WP 0005.

END OF TASK

END OF WORK PACKAGE

.

OPERATOR INSTRUCTIONS

EMERGENCY PROCEDURES UNDER UNUSUAL CONDITIONS

INITIAL SETUP:

Tools and Special Tools
Fire Extinguisher (Tool Set, SATS) (WP 0113, Item 6)

Materials/Parts
Interface device adapter assembly (chemical and biological protection kit)

Personnel Required
General Purpose User, GPU - (1)

References
FM 3-5
FM 10-67-1
WP 0005

NBC DECONTAMINATION PROCEDURES

The following procedures must be followed until field Nuclear, Biological, and Chemical (NBC) Decontamination Facilities are available. Assigned operators will assist the supporting NBC unit.

WARNING

If an NBC attack has occurred, do not use Chemical and Biological Protection Kit (CBPK) equipment until all items have been decontaminated. Refer to FM 3-5, NBC Decontamination, for detailed decontamination procedures.

1. If NBC attack is known or suspected, immediately put on mask and proceed as follows:
2. If the ASH is operating with either the dampener open or return air duct removed:
   a. Stop operation and notify your supervisor and personnel in the shelter connected to the ASH.
   b. Do not disconnect the ASH.
   c. Close or cover all openings.
   d. Have decontamination performed on the ASH.
   e. Operate ASH according to the procedures in WP 0005 with both ducts attached and the fresh air damper closed.
3. If the ASH is operating with dampener closed and both air ducts attached:
   a. Operation may continue.
   b. Do not open any door or panels.
   c. Have decontamination performed on ASH.

FUEL SPILLS

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

1. When operating in recirculating air setup, proceed as follows:
   a. Close the fresh air damper if it is open.
   b. Turn selector switch to VENT and allow unit to cool down for 2 minutes.
   c. Turn selector switch to OFF.
   d. Notify your supervisor.
   e. Clean up fuel spills per FM 10-67-1.
2. When operating in 100% fresh air setup, proceed as follows:
   a. Stop operation by setting the selection switch in the OFF position.
   b. Check shelter being serviced by the ASH for any fuel odors. Evacuate area until the shelter is ventilated and free of any fuel odors.
   c. Notify your supervisor.
   d. Clean up fuel spills per FM 10-67-1.
3. When operating on improved (hard) surfaces, call for wash-down truck to reduce rate of vaporization.
4. When operating on unimproved (soft) surfaces, cover areas with dry soil to reduce rate of vaporization.
5. Notify your supervisor.
6. If fuel gets on your clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

END OF WORK PACKAGE

OPERATOR INSTRUCTIONS

STOWAGE AND DECAL AND DATA PLATE GUIDE

INTRODUCTION

The Stowage and Decal and Data Plate Guide illustrates the locations for equipment stowage and decals and data plates. Detailed information on each decal/data plate is also provided. Also shown are the locations of stencils that contain warnings or information required to safely operate the ASH.

Stowage Guide

STOWAGE LOCATIONS

Stowage locations for ASH equipment are shown in the following illustration.

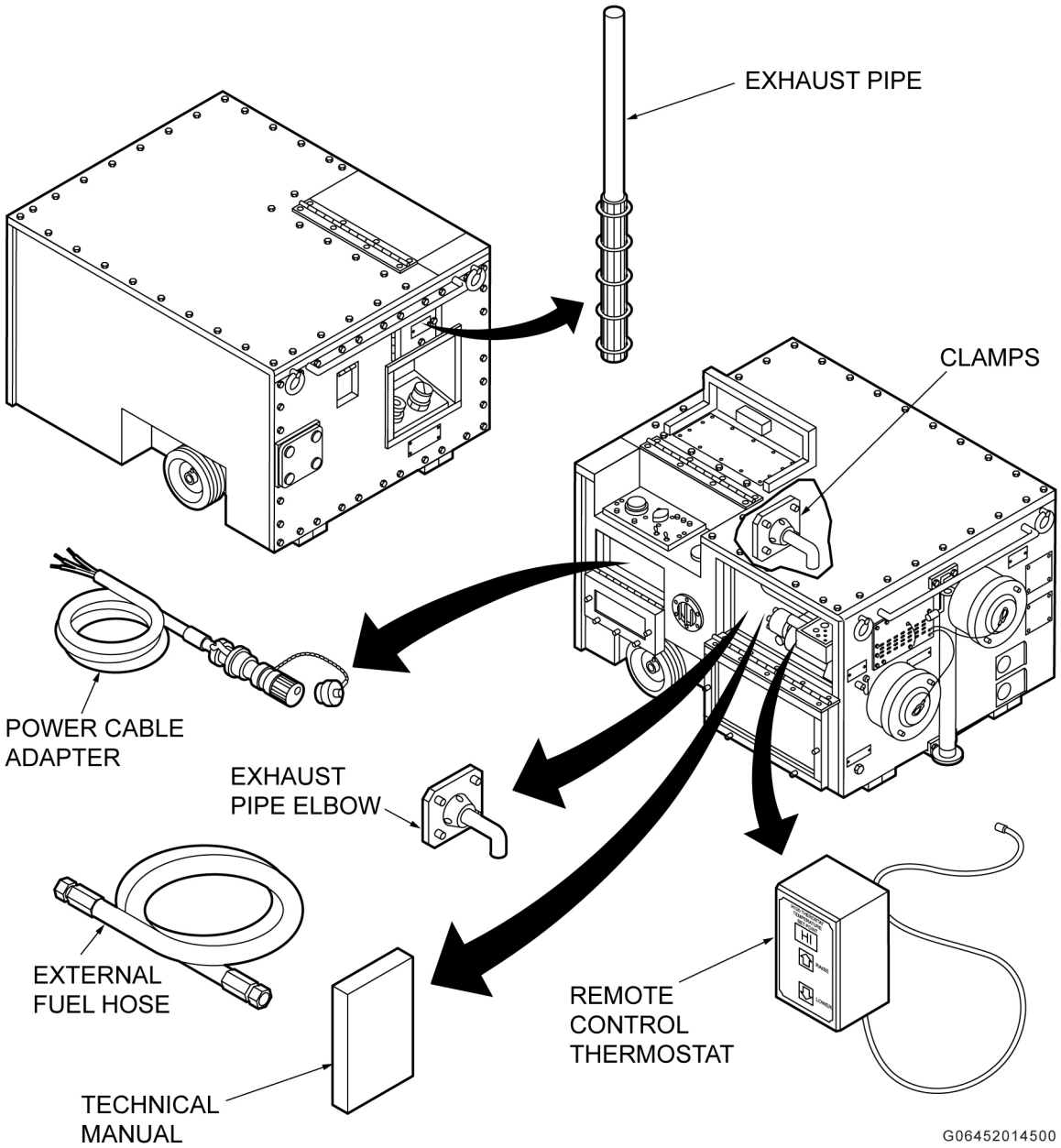


Figure 1. ASH Stowage Locations

STOWAGE AND DECAL AND DATA PLATE GUIDE - (CONTINUED)

DECALS AND DATA PLATES

Decals and data plates used on the ASH are shown in following illustrations.

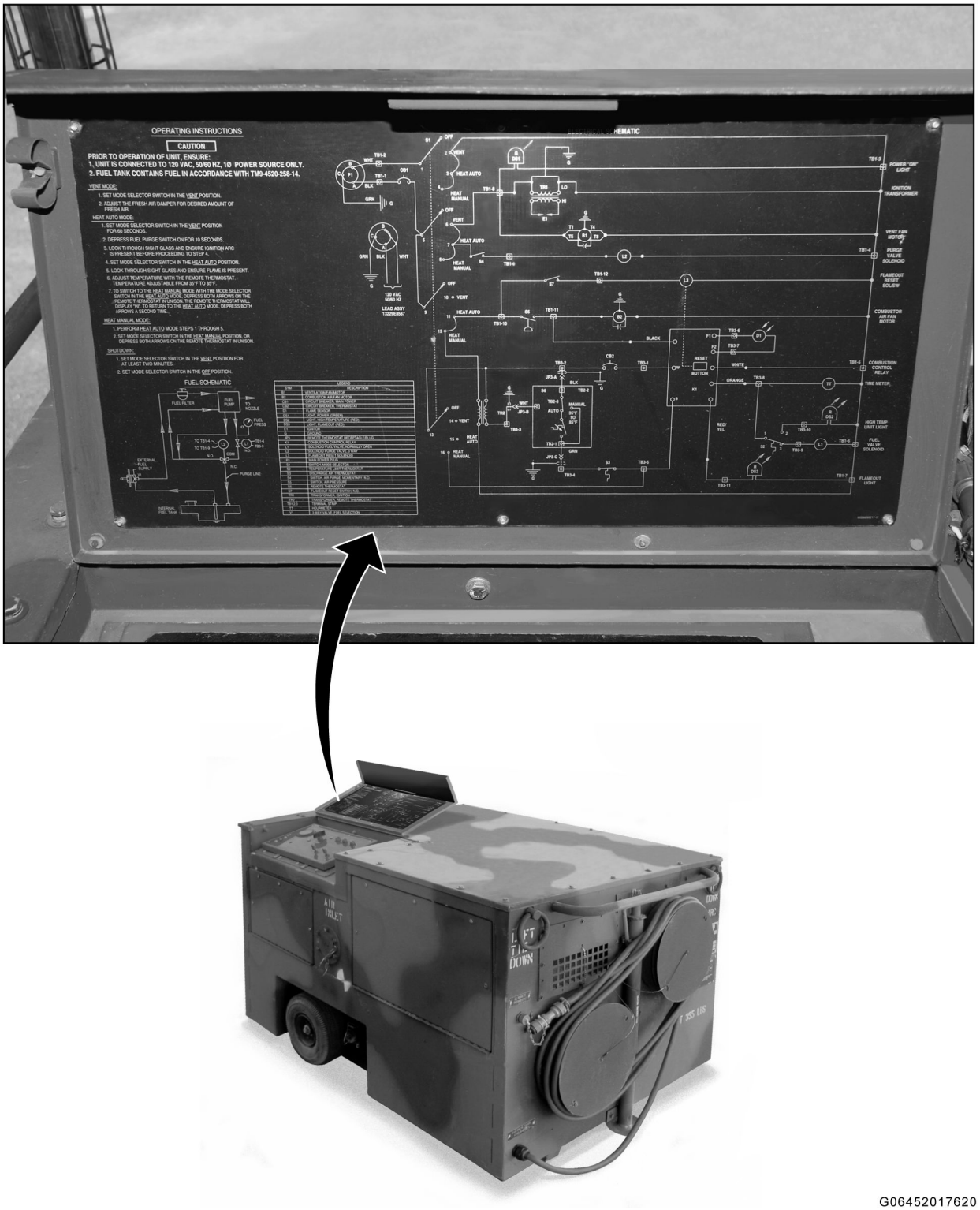

OPERATING INSTRUCTIONS
CAUTION
PRIOR TO OPERATION OF UNIT, ENSURE:
1. UNIT IS CONNECTED TO 120 VAC, 50/60 HZ, 1Ø POWER SOURCE ONLY.
2. FUEL TANK CONTAINS FUEL IN ACCORDANCE WITH TM9-4520-258-14.
VENT MODE:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION.
2. ADJUST THE FRESH AIR DAMPER FOR DESIRED AMOUNT OF FRESH AIR.
HEAT AUTO MODE:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION FOR 60 SECONDS.
2. DEPRESS FUEL PURGE SWITCH ON FOR 10 SECONDS.
3. LOOK THROUGH SIGHT GLASS AND ENSURE IGNITION ARC IS PRESENT BEFORE PROCEEDING TO STEP 4.
4. SET MODE SELECTOR SWITCH IN THE HEAT AUTO POSITION.
5. LOOK THROUGH SIGHT GLASS AND ENSURE FLAME IS PRESENT.
6. ADJUST TEMPERATURE WITH THE REMOTE THERMOSTAT. TEMPERATURE ADJUSTABLE FROM 35°F TO 80°F.
7. TO SWITCH TO THE HEAT MANUAL MODE WITH THE MODE SELECTOR SWITCH IN THE HEAT AUTO MODE, DEPRESS BOTH ARROWS ON THE REMOTE THERMOSTAT IN UNISON. THE REMOTE THERMOSTAT WILL DISPLAY "HI". TO RETURN TO THE HEAT AUTO MODE, DEPRESS BOTH ARROWS A SECOND TIME.
HEAT MANUAL MODE:
1. PERFORM HEAT AUTO MODE STEPS 1 THROUGH 5.
2. SET MODE SELECTOR SWITCH IN THE HEAT MANUAL POSITION, OR DEPRESS BOTH ARROWS ON THE REMOTE THERMOSTAT IN UNISON.
SHUTDOWN:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION FOR AT LEAST TWO MINUTES.
2. SET MODE SELECTOR SWITCH IN THE OFF POSITION.
FUEL SCHEMATIC
AIR INLET
LIFT TIE DOWN
G06452017620

Figure 2. Operating Instructions Data Plate.

STOWAGE AND DECAL AND DATA PLATE GUIDE - (CONTINUED)

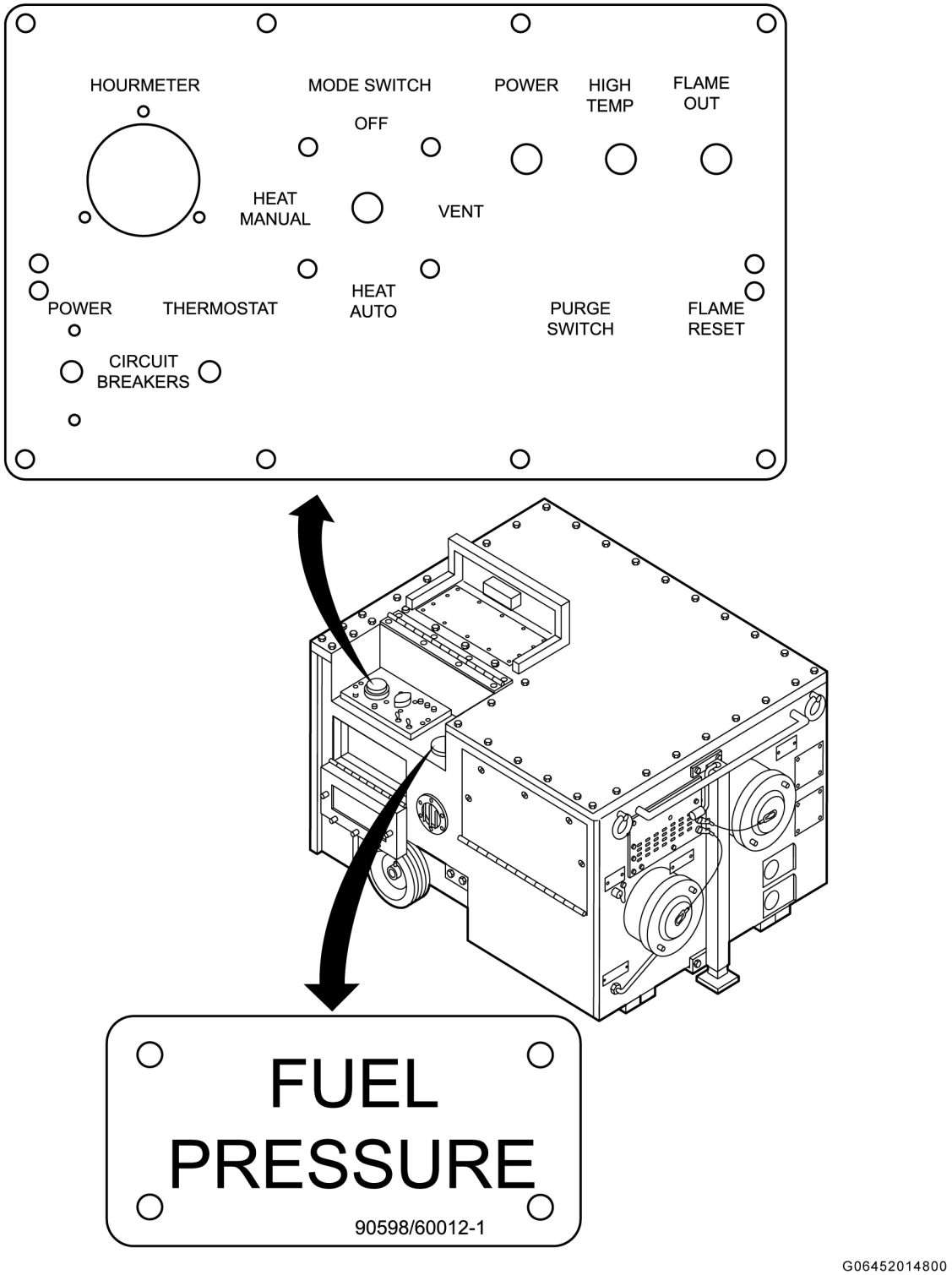


Figure 3. Control Panel and Fuel Pressure Data Plates.

STOWAGE AND DECAL AND DATA PLATE GUIDE - (CONTINUED)

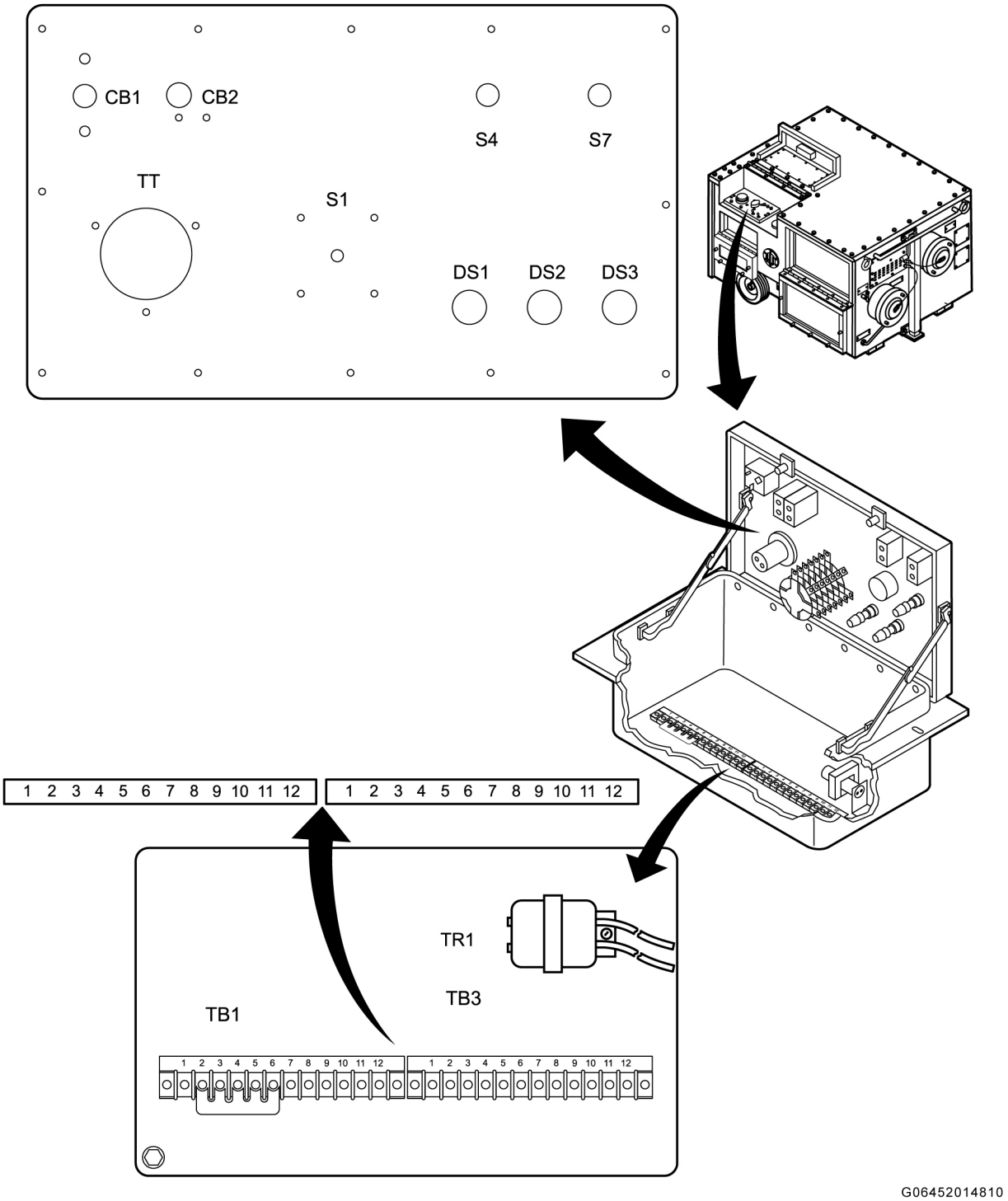


Figure 4. Control Box Wiring Data Plates.

STOWAGE AND DECAL AND DATA PLATE GUIDE - (CONTINUED)

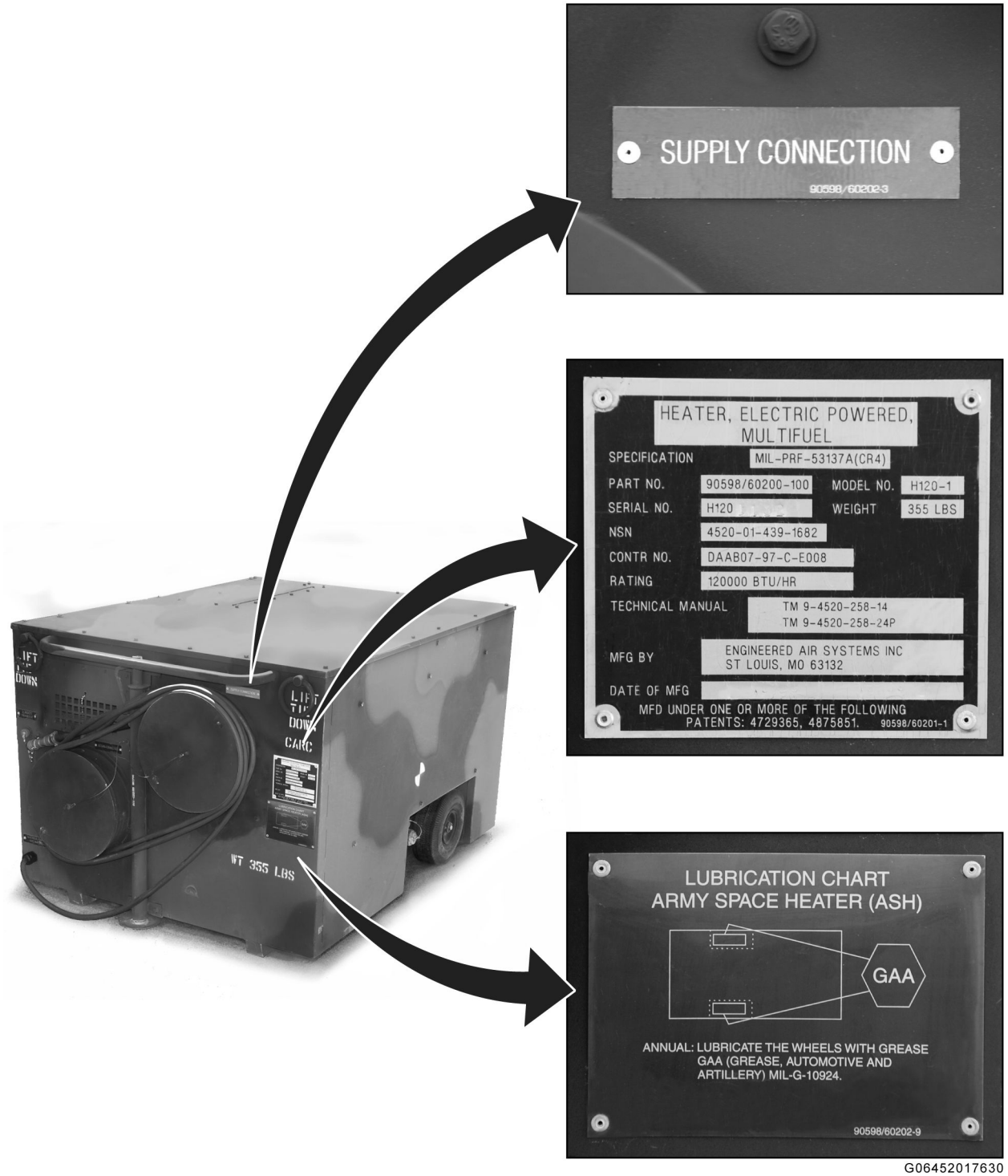


Figure 5. ASH and Supply Connection Data Plates.

STOWAGE AND DECAL AND DATA PLATE GUIDE - (CONTINUED)

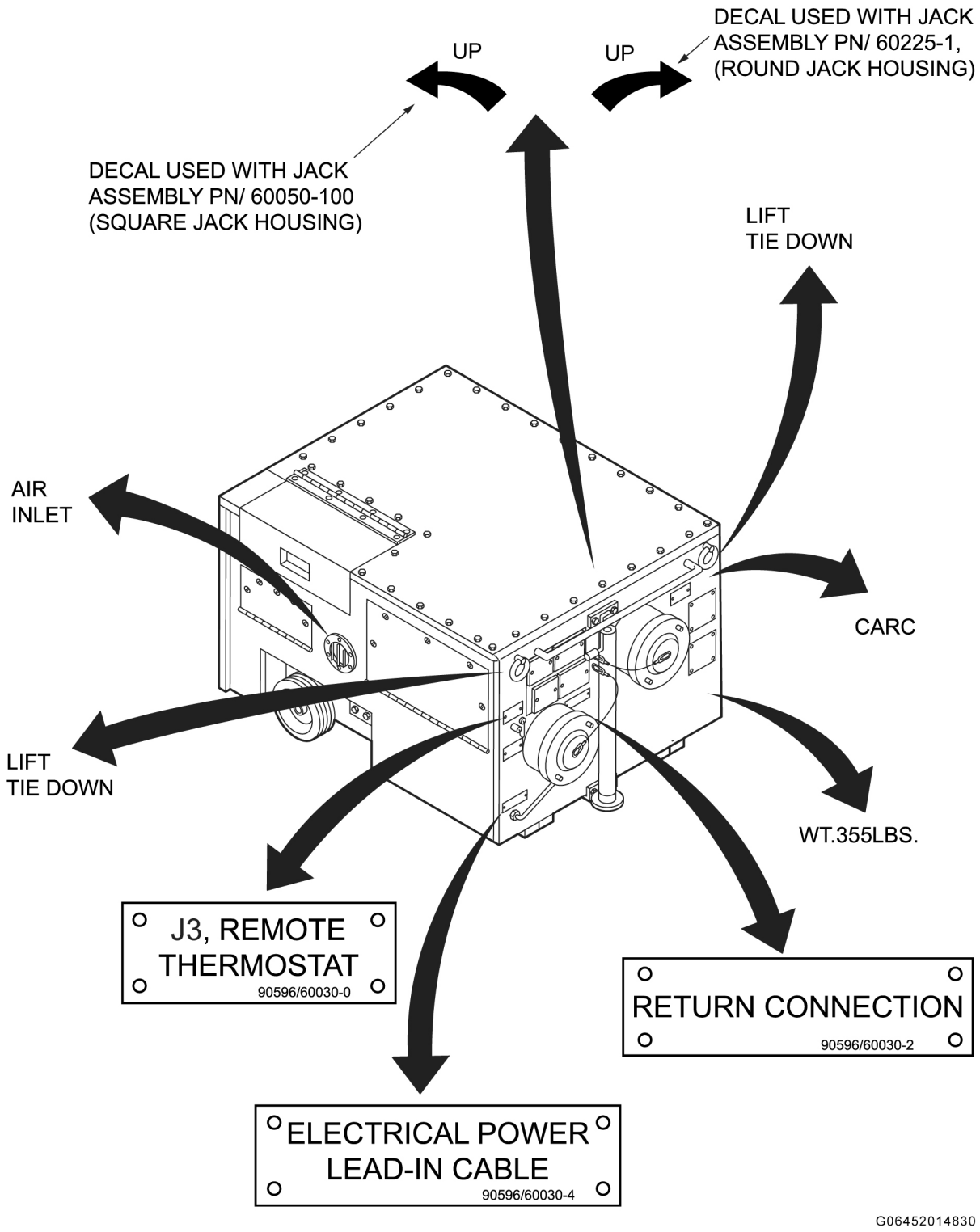


Figure 6. Miscellaneous Decals and Data Plates.

STOWAGE AND DECAL AND DATA PLATE GUIDE - (CONTINUED)

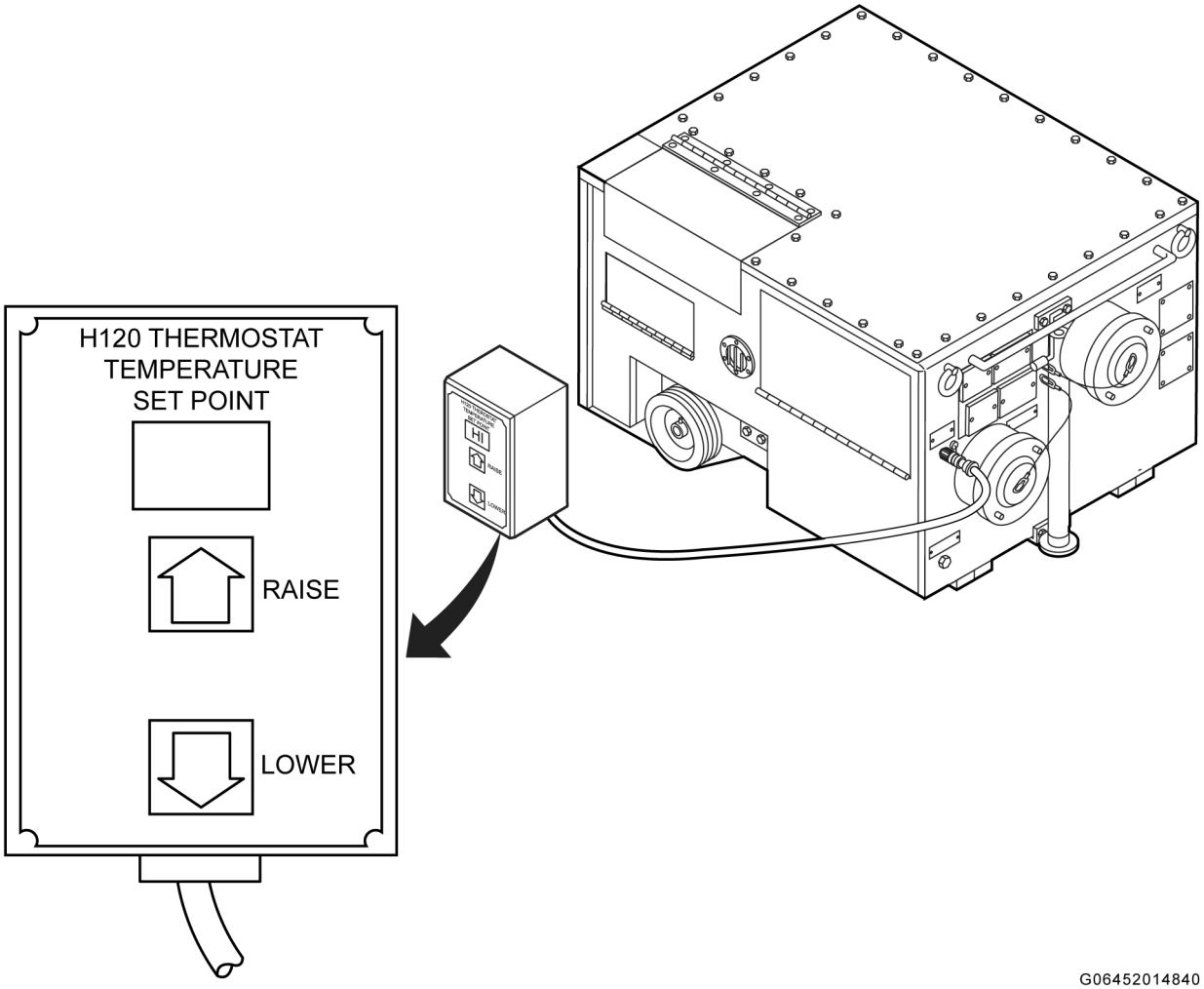


Figure 7. Remote Control Thermostat Data Plate.

STOWAGE AND DECAL AND DATA PLATE GUIDE - (CONTINUED)

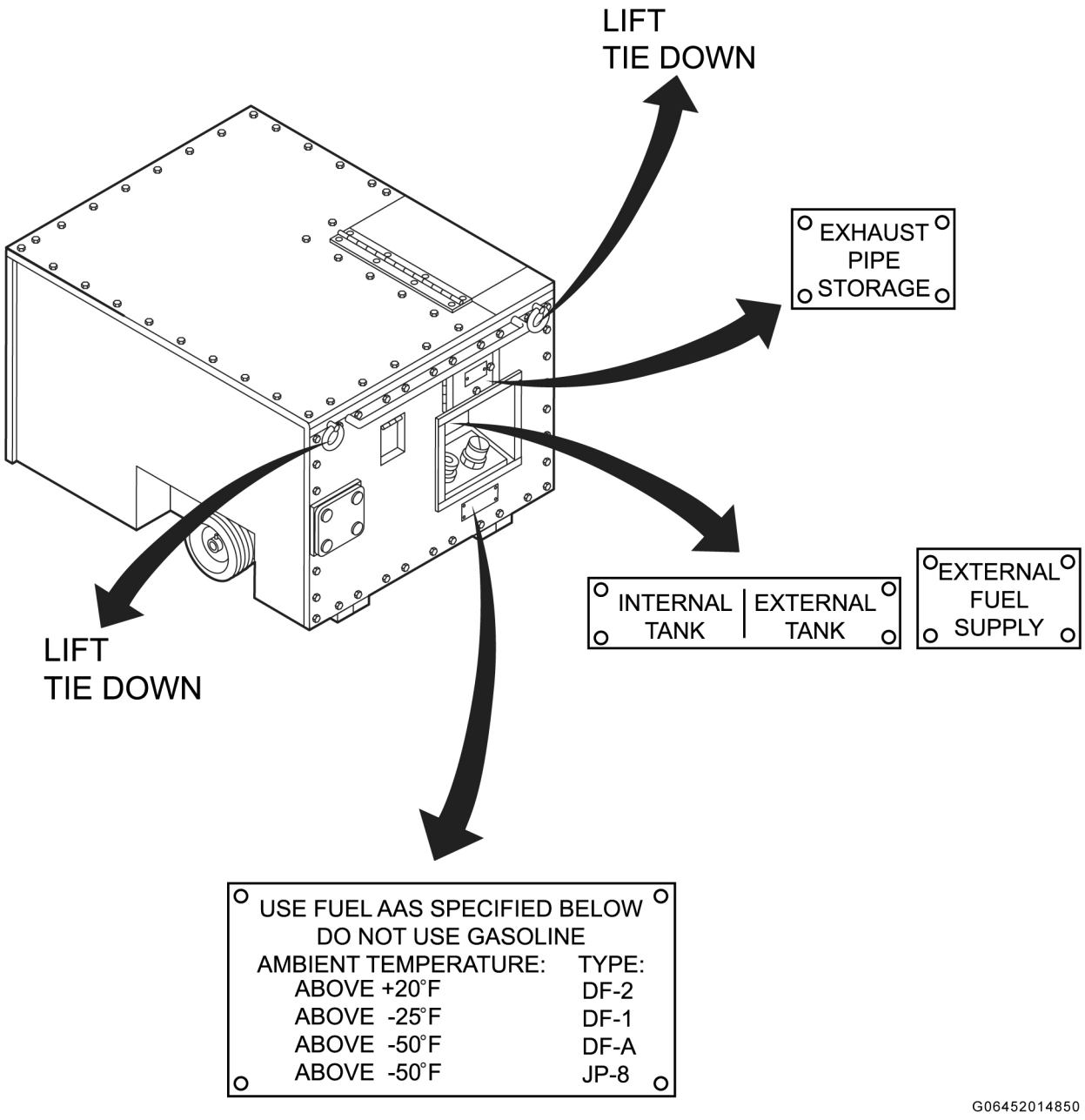


Figure 8. Rear Panel Decals and Data Plates.

END OF WORK PACKAGE

CHAPTER 3

TROUBLESHOOTING PROCEDURES

FOR

ARMY SPACE HEATER H-120, H-120-1

FIELD MAINTENANCE

TROUBLESHOOTING INDEX

This work package lists the common malfunctions that may occur during the operation or maintenance of the ASH and its components. Locate the malfunction/system in the following index and then refer to the corresponding work package for the appropriate troubleshooting procedure.

NOTE

This manual cannot list all malfunctions, tests, inspections, or corrective actions that may occur. If a malfunction is either not listed or is not corrected by listed corrective actions, notify your supervisor.

Malfunction/Symptom	Troubleshooting Procedure
Operator Troubleshooting Procedure	
1. ASH Will Not Start	WP 0010
2. Combustion Air Fan Does Not Operate	WP 0010
3. Fuel Pressure Stays at 25 PSI or Less in HEAT AUTO or HEAT MANUAL Modes	WP 0010
4. ASH Flames Out Repeatedly (More than 3 times in a row).	WP 0010
5. No Combustion in HEAT AUTO Mode	WP 0010
6. Excessive Black Smoke in Exhaust.	WP 0010
7. Fan Motor Slows Down or Indicator Lights Dim	WP 0010
Field Troubleshooting Procedure	
8. ASH Will Not Start	WP 0011
9. Combustion Air Fan Does Not Operate	WP 0011
10. Fuel Pressure Stays at 25 PSI or Less in HEAT AUTO or HEAT MANUAL Modes	WP 0011
11. ASH Flames Out Repeatedly (more than 3 times in a row)	WP 0011
12. No Fuel Pressure Indicated	WP 0011
13. Low Fuel Pressure Indicated	WP 0011
14. Excessive Black Smoke in Exhaust	WP 0011
15. Fan Motor Slows Down, Indicator Lights Dim	WP 0011
16. Improper/No Spark in Igniter	WP 0011
17. ASH Backfires or Rumbles in HEAT AUTO and/or HEAT MANUAL Modes	WP 0011
18. Combustion Air Fan Does Not Operate (Black exhaust smoke and loud rumble).	WP 0011
19. No Combustion in HEAT AUTO Mode	WP 0011
20. No Combustion in HEAT MANUAL Mode	WP 0011

END OF WORK PACKAGE

OPERATOR INSTRUCTIONS

OPERATOR TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

Personnel Required
General Purpose User, GPU - (1)

Equipment Condition
None

References
WP 0005

GENERAL INFORMATION

This work package contains the procedures to be followed by operator personnel in correcting possible malfunctions in the equipment. Each malfunction for an individual component, unit, or system is followed by a list of tests or corrective actions to take.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by the listed corrective action, notify your supervisor.

The troubleshooting flow process that follows lists the common malfunctions which you may find during the operation or maintenance of the ASH or its components. You should check the tests/inspections and corrective actions in the order listed.

NOTE

Before you use these procedures, be sure you have performed all applicable operating checks. Functional checks and visual inspection should isolate most malfunctions or potential problems that occur with this equipment.

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

TROUBLESHOOTING PROCEDURES

MALFUNCTION 1. ASH will not start.

Is power cable properly connected to power source?

YES / NO

NO → Connect power cable (WP 0005, Assembly and preparation for use).

YES →

Is power source operating properly?

YES / NO

NO → Notify Field Maintenance.

YES →

Is circuit breaker (CB1) "POWER" or (CB2) "THERMOSTAT" in the depressed position?

YES / NO

NO → Depress CB1 and CB2.

YES → Notify Field Maintenance.

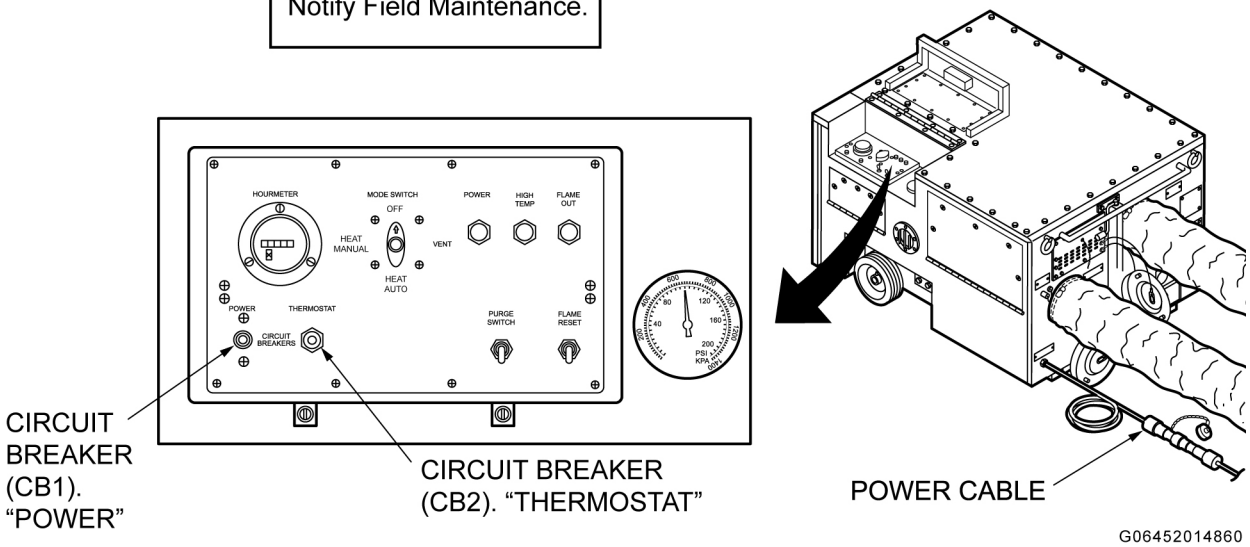


Figure 1. ASH Will Not Start.

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 2. Combustion fan does not operate.

Check for blocked, kinked, torn or damaged return air duct.

NO / YES

Straighten kinks and/or remove blockage. If torn or damaged, notify Field Maintenance.

If duct cannot be straightened, it must be replaced. Notify Field Maintenance.

Check for loose or disconnected supply air duct.

Notify Field Maintenance.

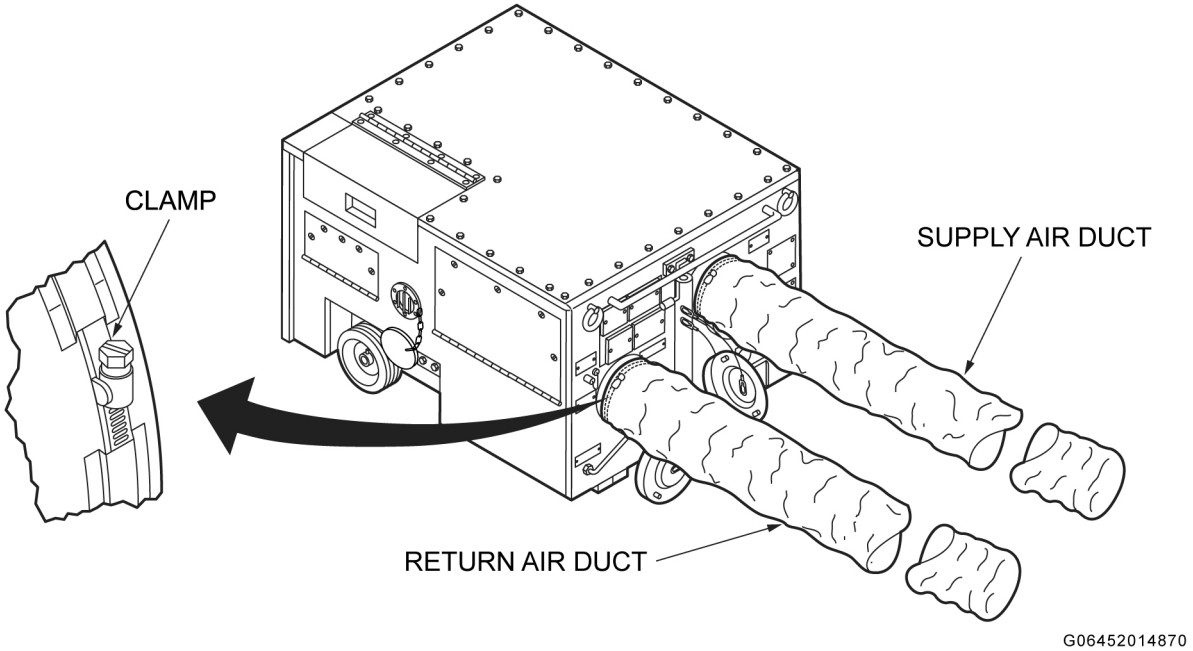


Figure 2. Combustion Air Fan Does Not Operate.

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 3. Fuel pressure stays at 25 psi or less in HEAT AUTO or HEAT MANUAL modes.

Is FLAME OUT light on? NO YES

Check fuel level of internal tank or external tank.

Restart (WP 0005, Operating Procedures).

Is there enough fuel to operate? NO YES

Add fuel (WP 0005, fueling).

Is fuel valve handle set between internal tank or external tank? (Valve must not be set between stops.) NO YES

Is HIGH TEMP light on?

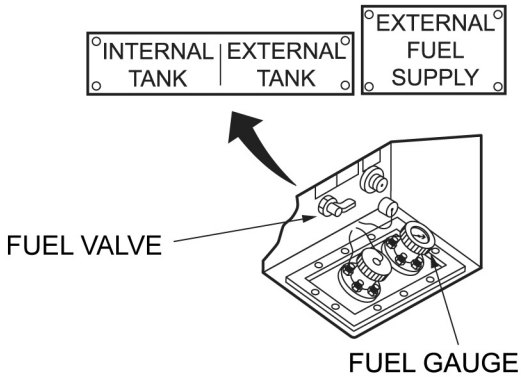
Set fuel valve to internal tank or external tank.

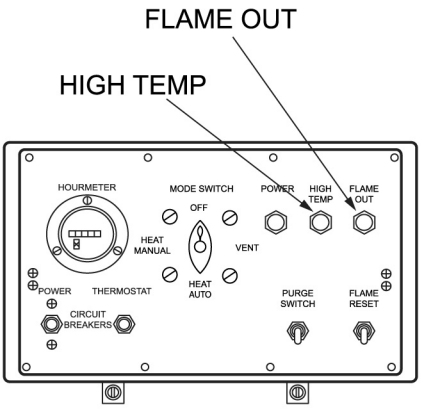
NO YES

Is there a blocked or kinked supply/return air duct? NO YES

Straighten kinks/remove blockage.

Notify Field Maintenance.





G06452014880

Figure 3. Fuel Pressure Stays at 25 PSI or Less in Heat Auto or Heat Manual Modes.

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

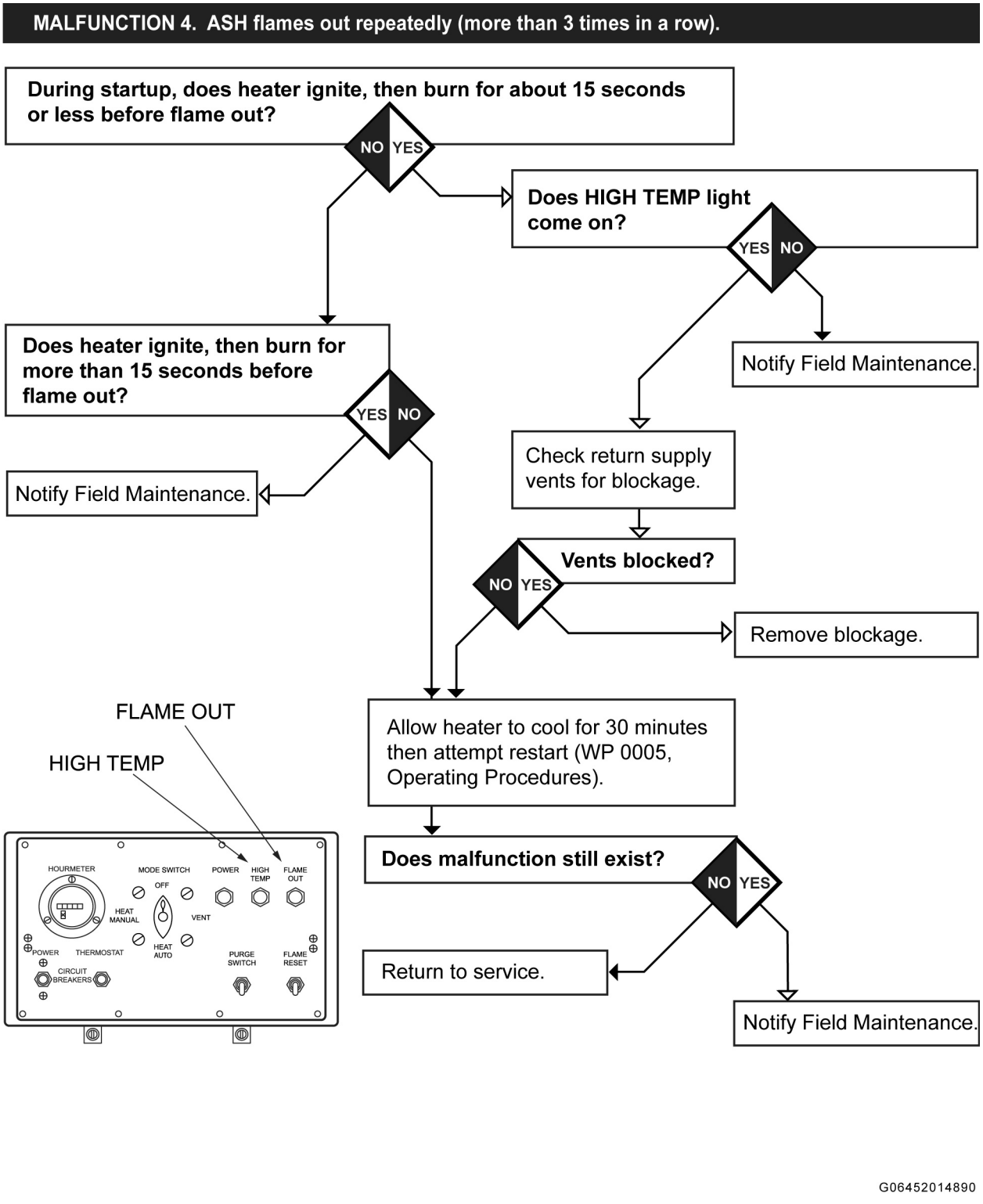


Figure 4. ASH Flames Out Repeatedly (More Than 3 Times in a Row).

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 5. No combustion in HEAT AUTO mode.

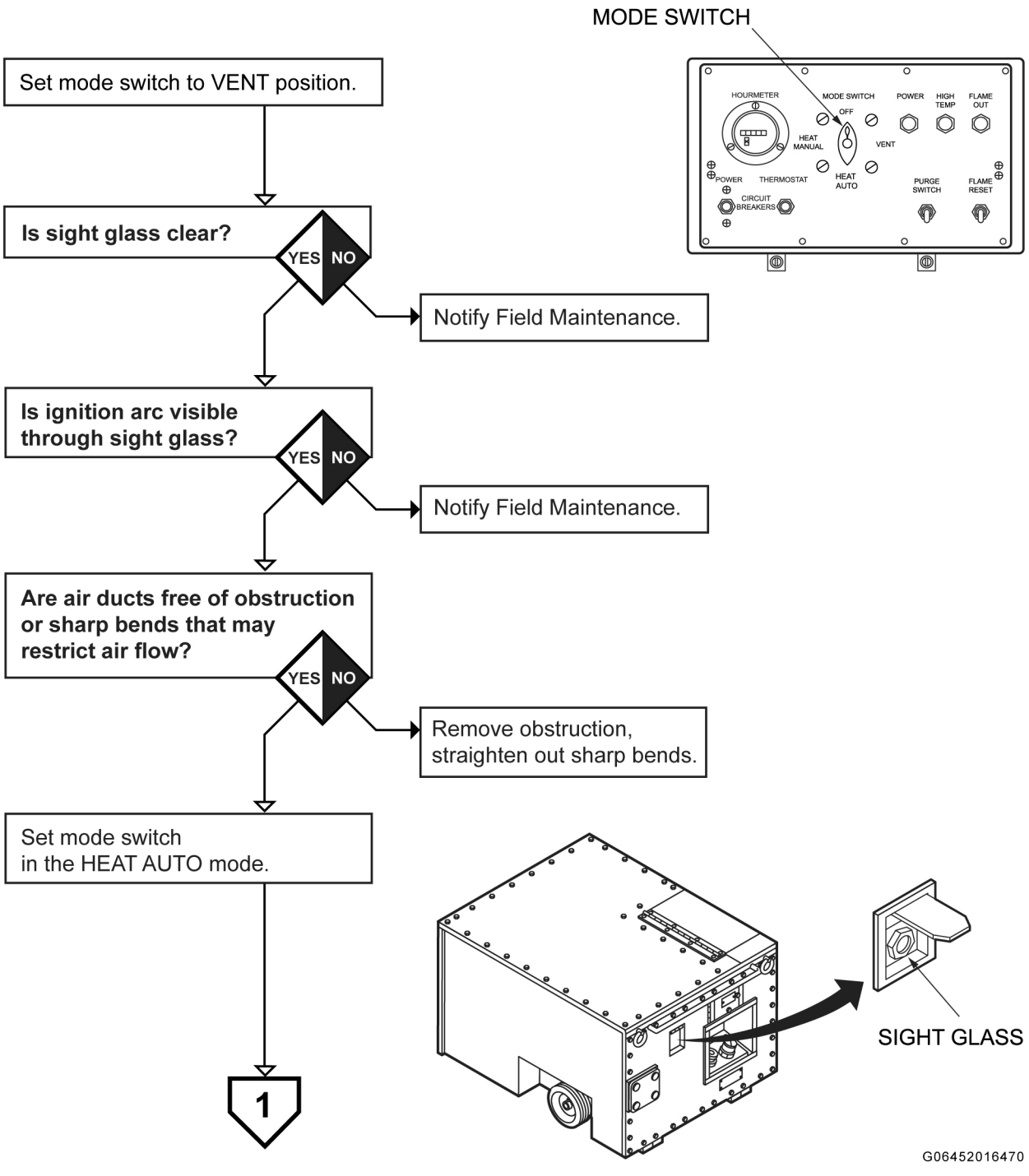


Figure 5. No Combustion in Heat Auto Mode (Sheet 1 of 3).

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 5. No combustion in AUTO HEAT mode- continued.

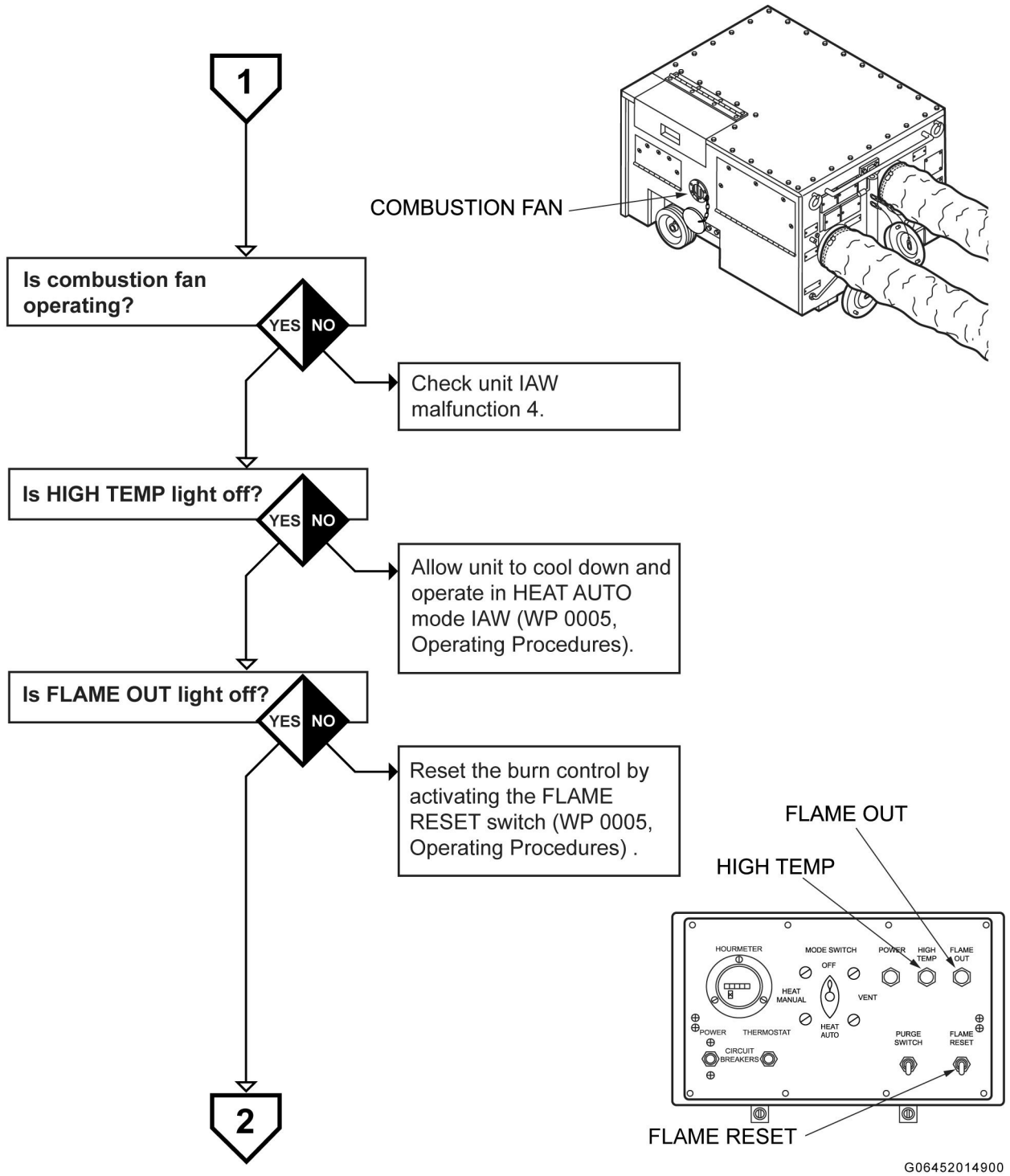


Figure 5. No Combustion in Heat Auto Mode (Sheet 2 of 3).

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 5. No combustion in HEAT AUTO mode- continued.

2

Is remote thermostat set at least 3 degrees above ambient temperature?

YES NO

Adjust remote thermostat (WP 0005, Operating Procedures).

Does fuel pressure gauge indicate an increase in fuel pressure (WP 0005, Table 3)?

Notify Field Maintenance.

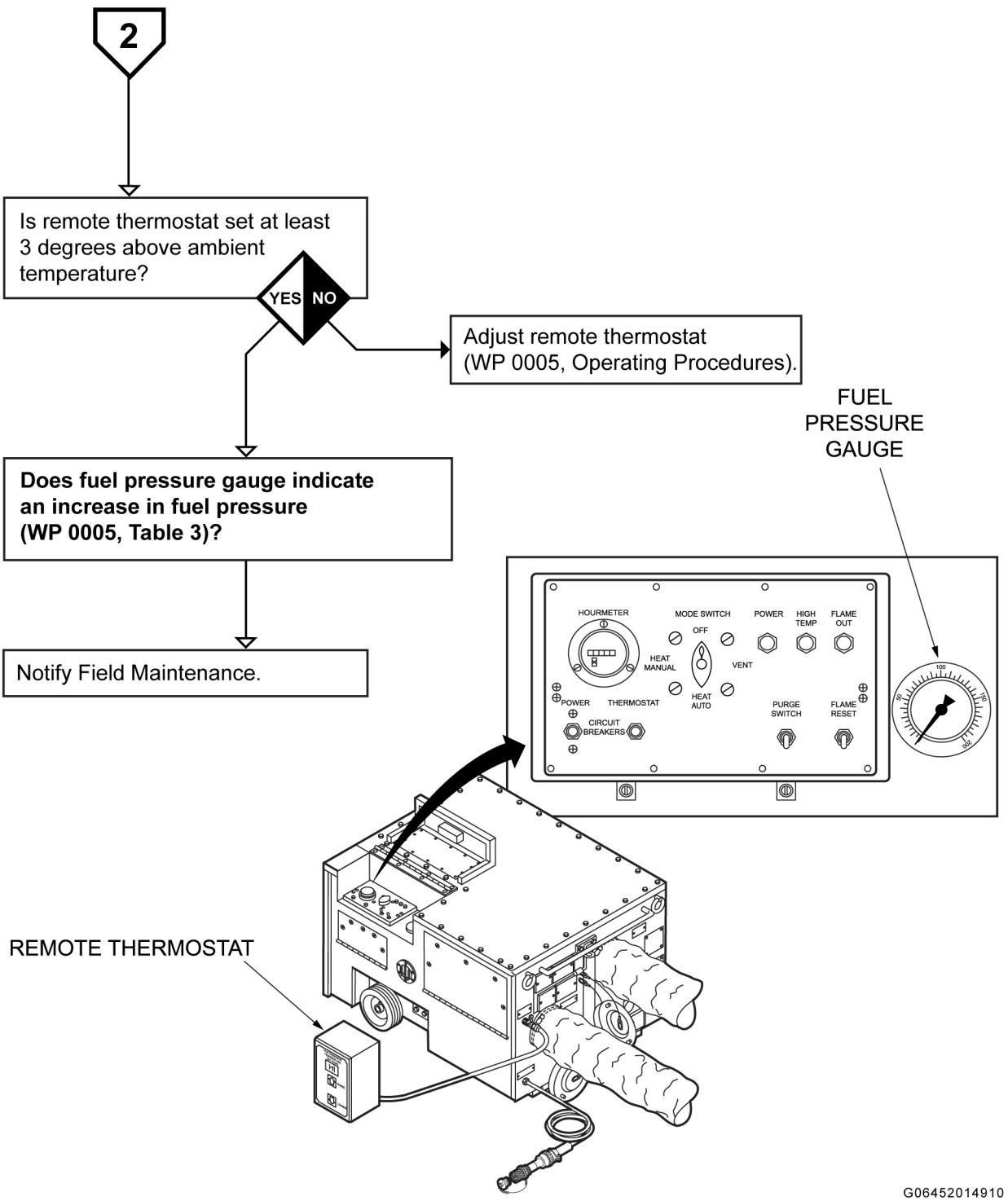


Figure 5. No Combustion in Heat Auto Mode (Sheet 3 of 3).

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 6. Excess black smoke in exhaust.

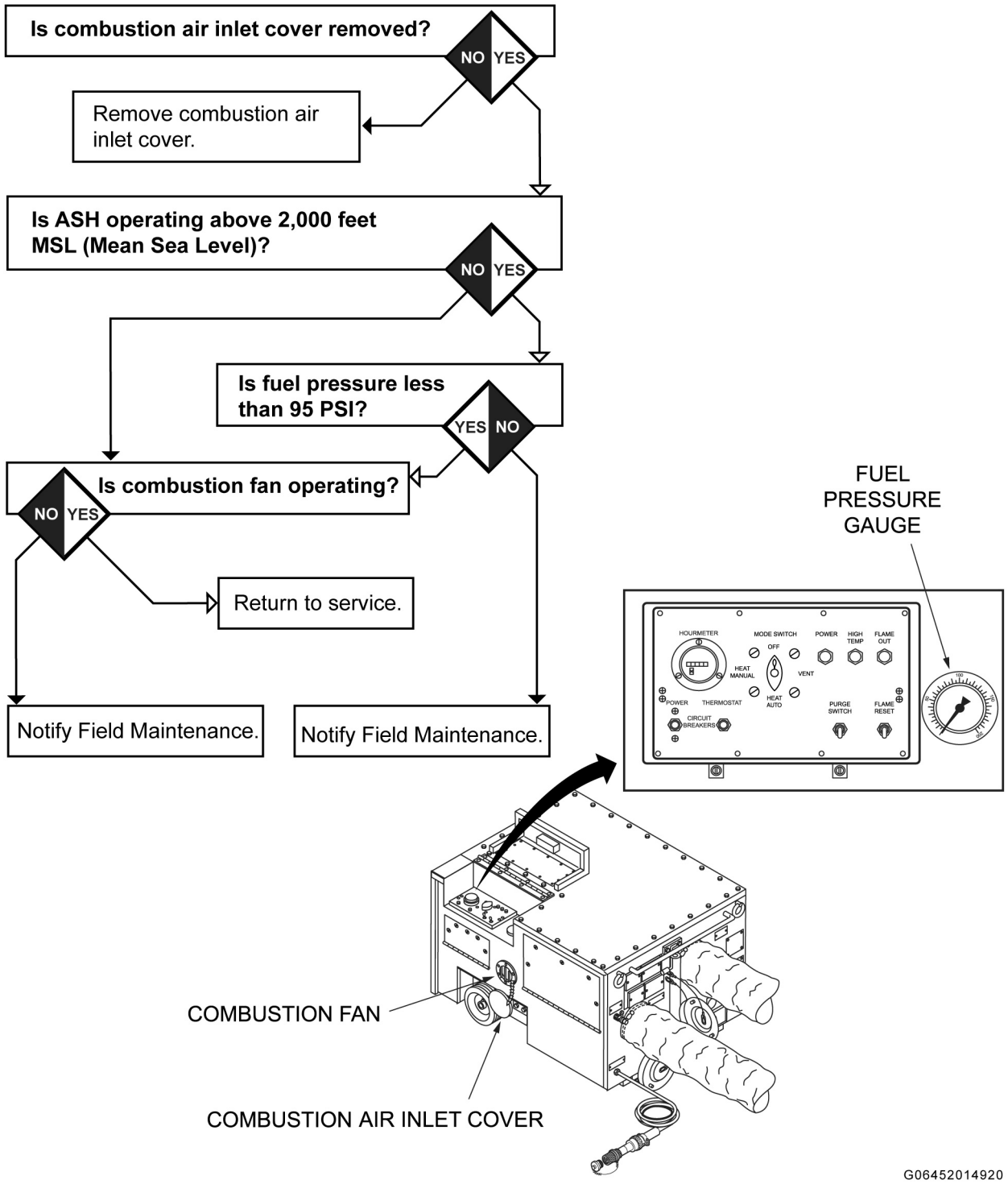


Figure 6. Excessive Black Smoke in Exhaust.

OPERATOR TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 7. Fan motor slows down or indicator lights dim.

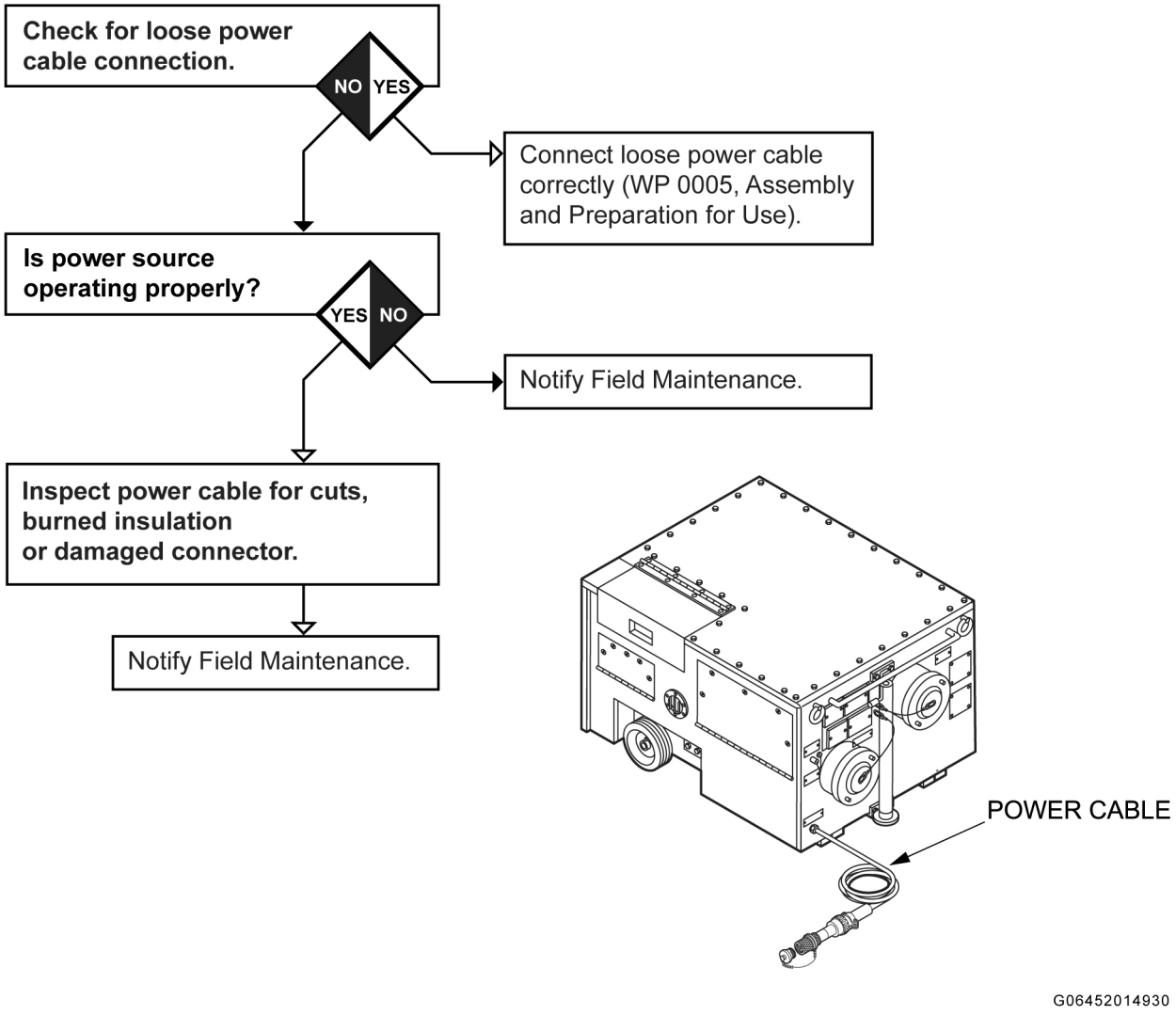


Figure 7. Fan Motor Slows Down or Indicator Lights Dim.

END OF WORK PACKAGE

FIELD MAINTENANCE

FIELD TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 4-25.11
WP 0002
WP 0005
WP 0014
WP 0024
WP 0026
WP 0027
WP 0033
WP 0035
WP 0043
WP 0044
WP 0056
WP 0059
WP 0063
WP 0065
WP 0066
WP 0069
WP 0070
WP 0071
WP 0072
WP 0073
WP 0074
WP 0093

Equipment Condition
None

GENERAL INFORMATION

This work package contains the procedures to be followed by field personnel in correcting possible malfunctions in the equipment. Each malfunction for an individual component, unit, or system is followed by a list of tests or corrective actions to take. During troubleshooting, refer to WP 0093, Figure 2, ASH Electrical Schematic Diagram, and (Figure 1), Troubleshooting Component Location Guide in this work package.

NOTE

Be sure you have performed all applicable operating checks. Functional checks and visual inspection should isolate most malfunctions or potential problems that occur with this equipment.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

TROUBLESHOOTING PROCEDURES

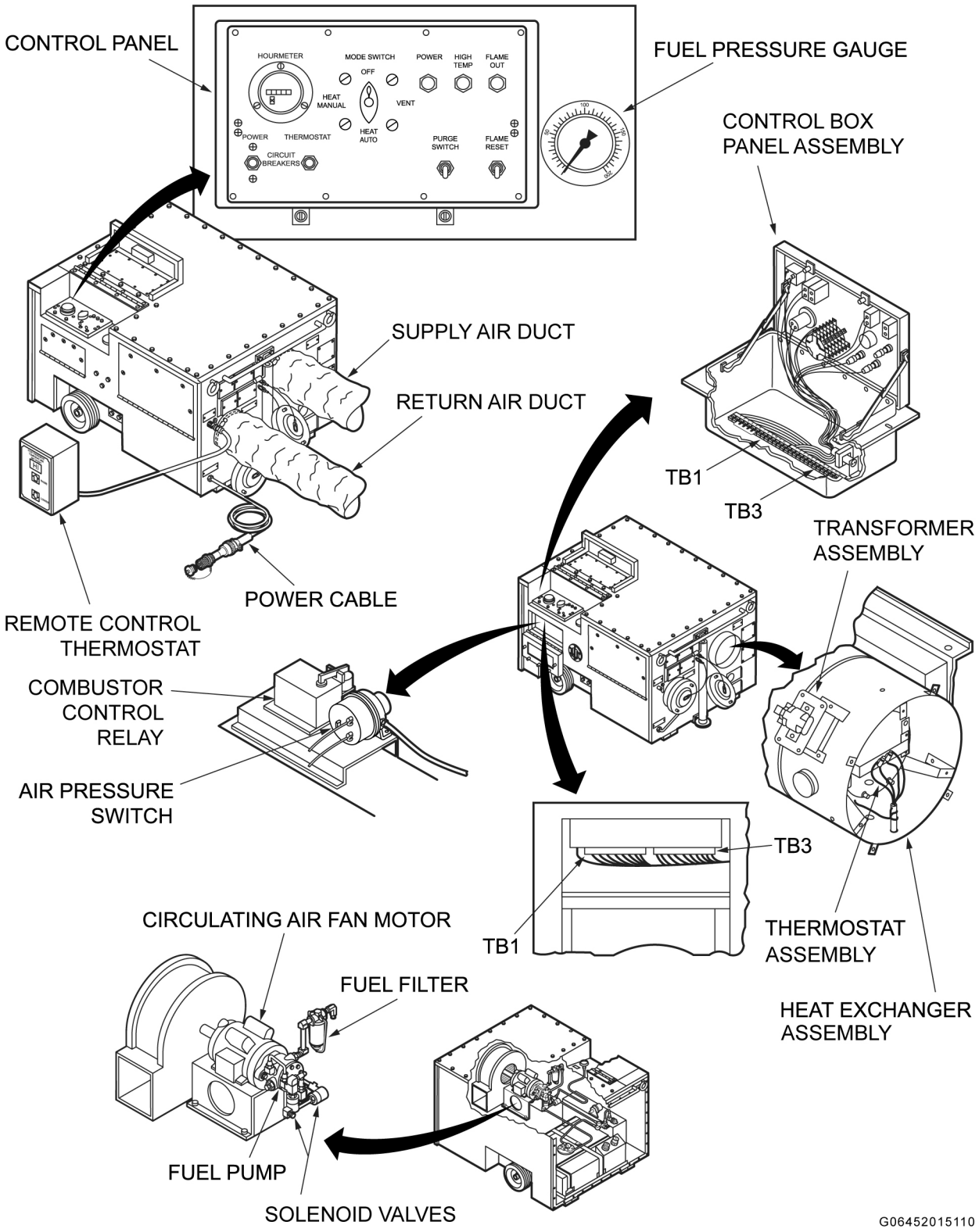


Figure 1. Troubleshooting Component Location Guide.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 1: ASH WILL NOT START

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 1. ASH will not start.

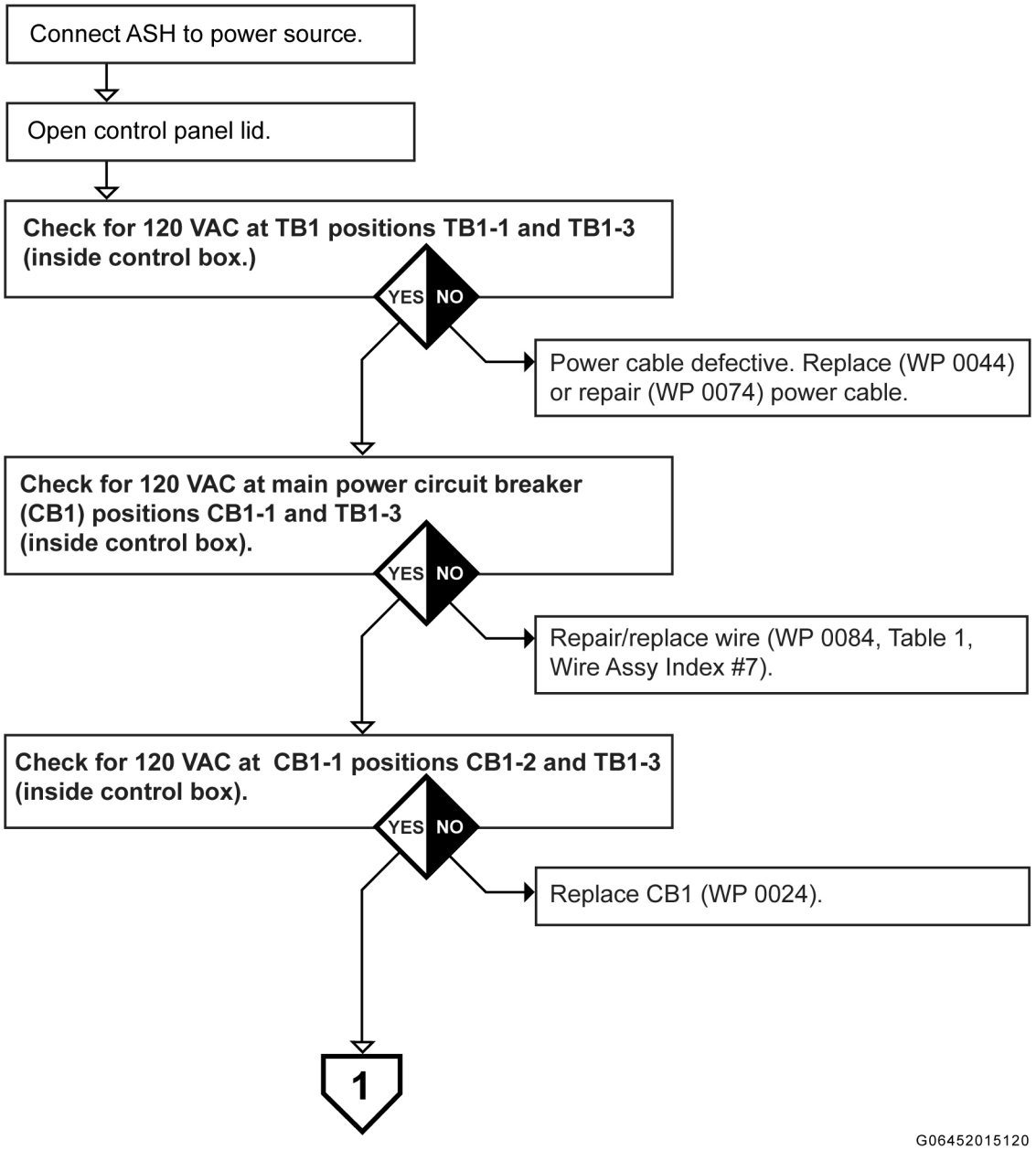

Connect ASH to power source.
Open control panel lid.
Check for 120 VAC at TB1 positions TB1-1 and TB1-3 (inside control box.)
YES
NO
Power cable defective. Replace (WP 0044) or repair (WP 0074) power cable.
Check for 120 VAC at main power circuit breaker (CB1) positions CB1-1 and TB1-3 (inside control box).
YES
NO
Repair/replace wire (WP 0084, Table 1, Wire Assy Index #7).
Check for 120 VAC at CB1-1 positions CB1-2 and TB1-3 (inside control box).
YES
NO
Replace CB1 (WP 0024).
1
G06452015120

Figure 2. ASH Will Not Start (Sheet 1 of 3).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 1. ASH will not start- continued.

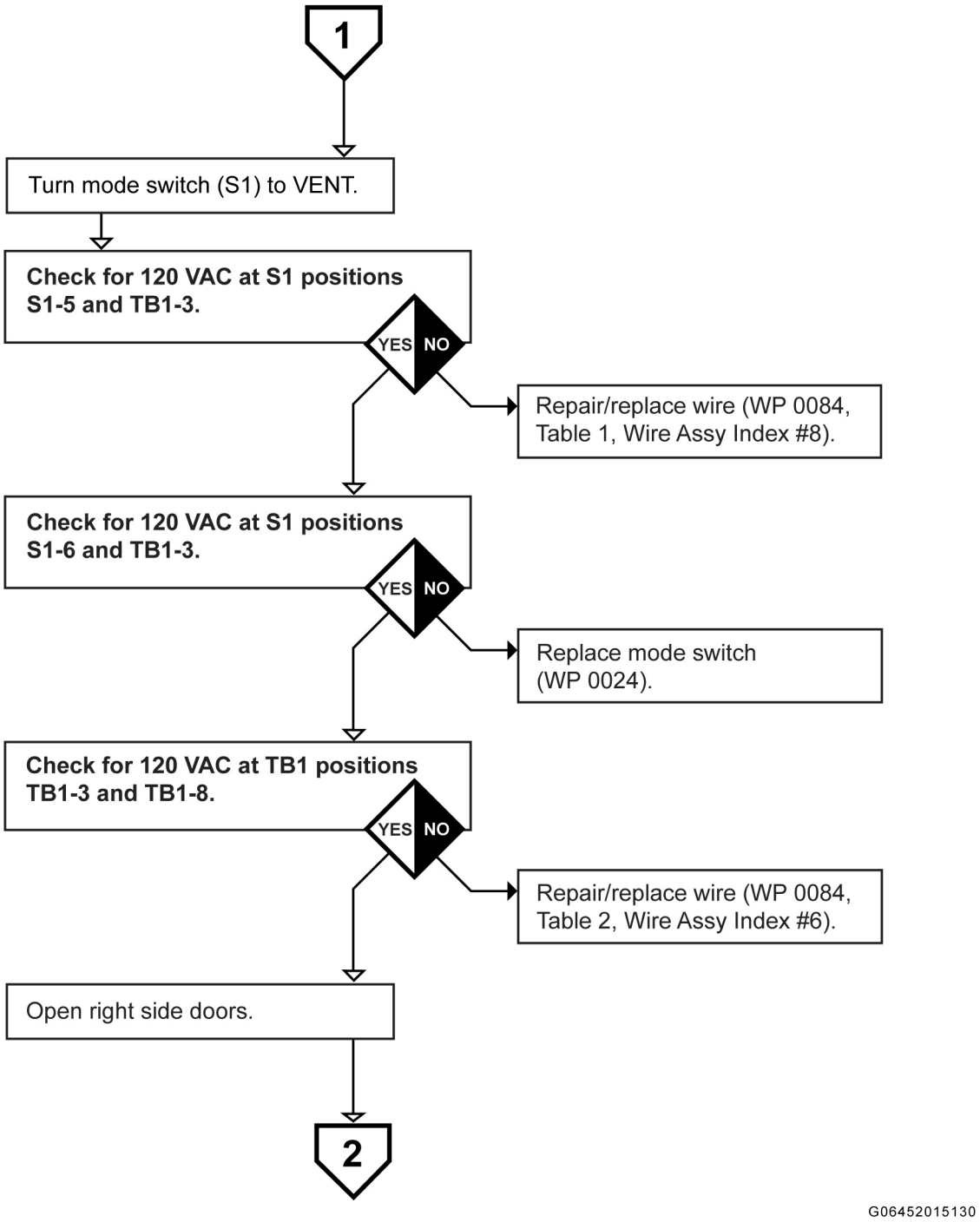

1
Turn mode switch (S1) to VENT.
Check for 120 VAC at S1 positions S1-5 and TB1-3.
YES
NO
Repair/replace wire (WP 0084, Table 1, Wire Assy Index #8).
Check for 120 VAC at S1 positions S1-6 and TB1-3.
YES
NO
Replace mode switch (WP 0024).
Check for 120 VAC at TB1 positions TB1-3 and TB1-8.
YES
NO
Repair/replace wire (WP 0084, Table 2, Wire Assy Index #6).
Open right side doors.
2
G06452015130

Figure 2. ASH Will Not Start (Sheet 2 of 3).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

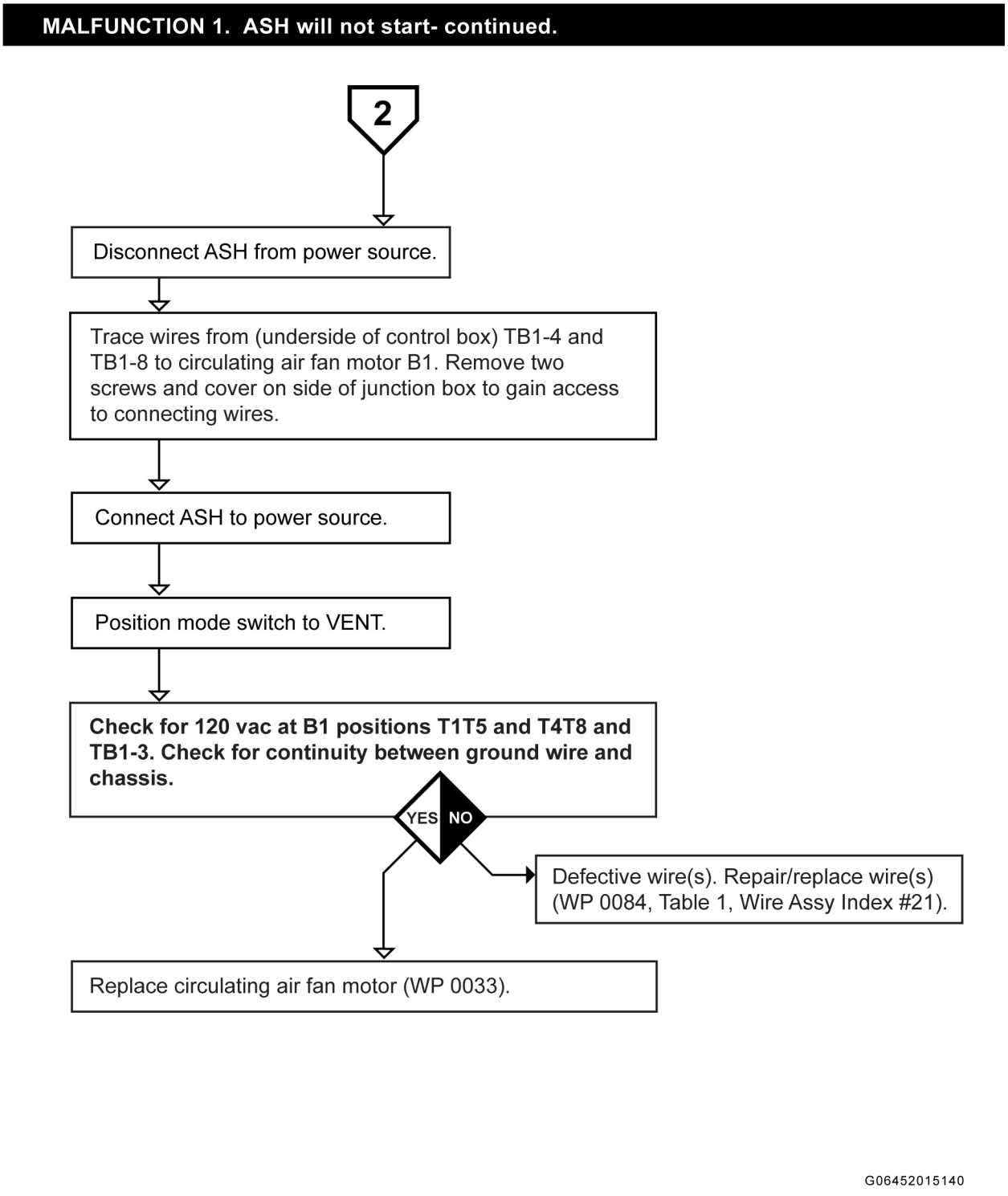

MALFUNCTION 1. ASH will not start- continued.
2
Disconnect ASH from power source.
Trace wires from (underside of control box) TB1-4 and TB1-8 to circulating air fan motor B1. Remove two screws and cover on side of junction box to gain access to connecting wires.
Connect ASH to power source.
Position mode switch to VENT.
Check for 120 vac at B1 positions T1T5 and T4T8 and TB1-3. Check for continuity between ground wire and chassis.
YES
NO
Defective wire(s). Repair/replace wire(s) (WP 0084, Table 1, Wire Assy Index #21).
Replace circulating air fan motor (WP 0033).
G06452015140

Figure 2. ASH Will Not Start (Sheet 3 of 3).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 2. COMBUSTION FAN DOES NOT OPERATE

WARNING

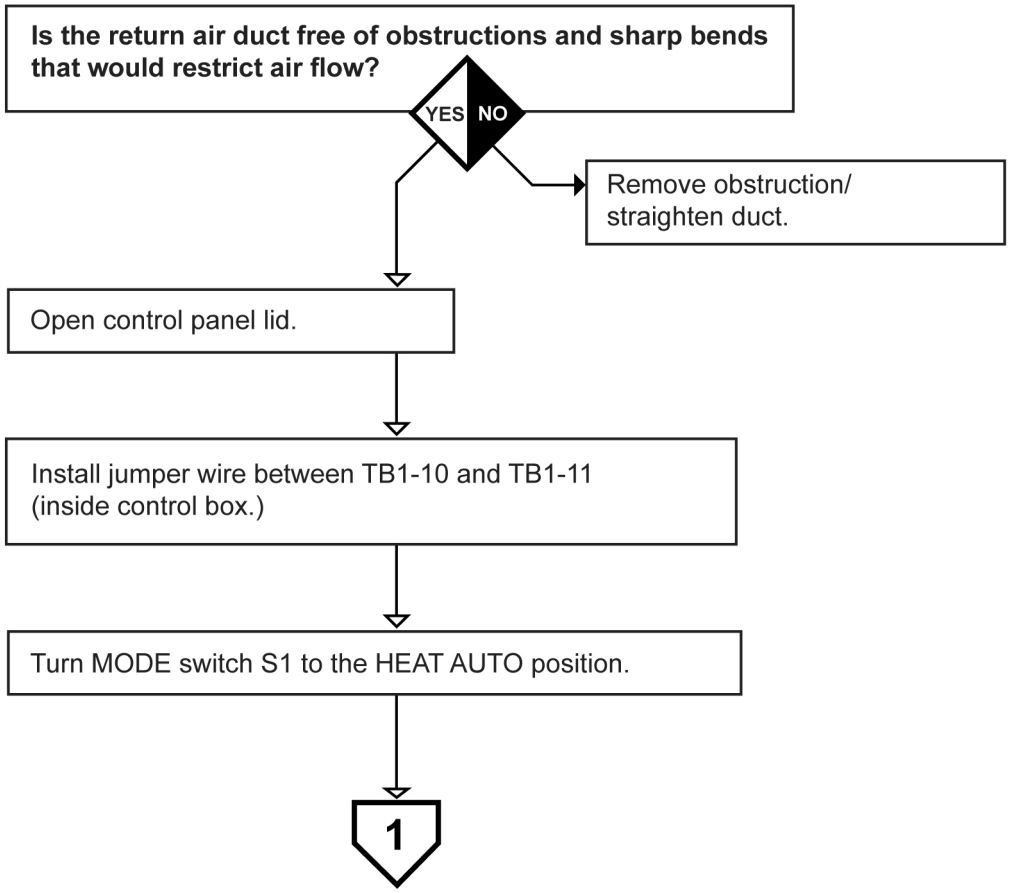
For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.


Is the return air duct free of obstructions and sharp bends that would restrict air flow?
YES
NO
Remove obstruction/ straighten duct.
Open control panel lid.
Install jumper wire between TB1-10 and TB1-11 (inside control box.)
Turn MODE switch S1 to the HEAT AUTO position.
1

G06452015150

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

Figure 3. Combustion Fan Does Not Operate (Sheet 1 of 2).

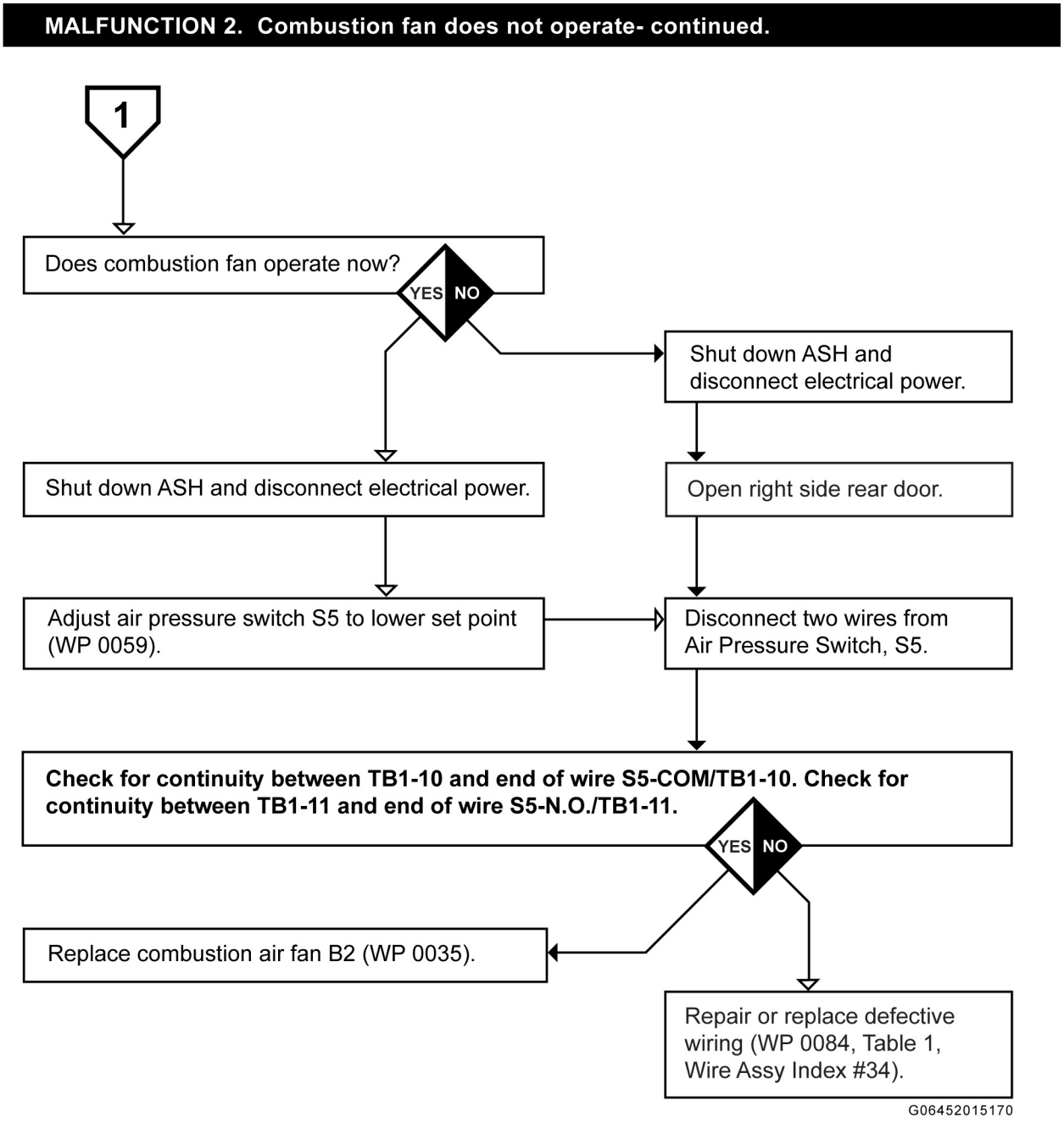

MALFUNCTION 2. Combustion fan does not operate- continued.
1
Does combustion fan operate now?
YES
NO
Shut down ASH and disconnect electrical power.
Shut down ASH and disconnect electrical power.
Open right side rear door.
Adjust air pressure switch S5 to lower set point (WP 0059).
Disconnect two wires from Air Pressure Switch, S5.
Check for continuity between TB1-10 and end of wire S5-COM/TB1-10. Check for continuity between TB1-11 and end of wire S5-N.O./TB1-11.
YES
NO
Replace combustion air fan B2 (WP 0035).
Repair or replace defective wiring (WP 0084, Table 1, Wire Assy Index #34).
G06452015170

Figure 3. Combustion Fan Does Not Operate (Sheet 2 of 2).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 3. FUEL PRESSURE STAYS AT 25 PSI OR LESS IN HEAT AUTO OR HEAT MANUAL

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

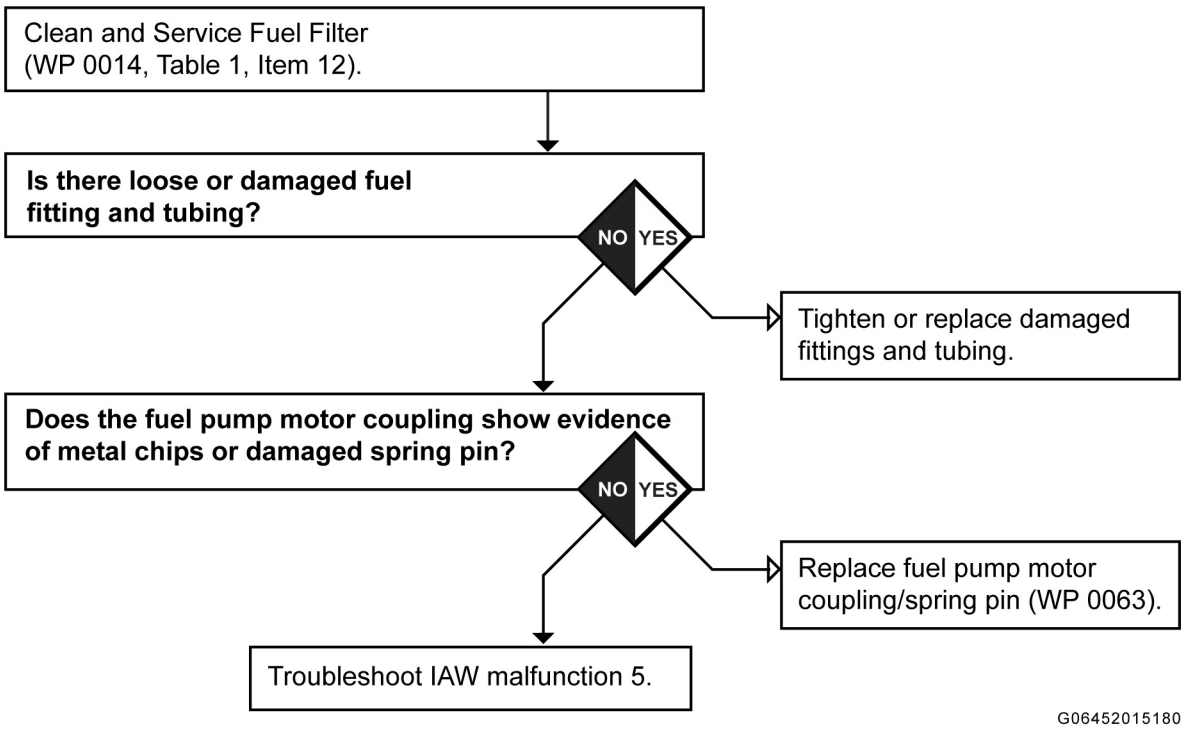

Clean and Service Fuel Filter
(WP 0014, Table 1, Item 12).
Is there loose or damaged fuel fitting and tubing?
NO
YES
Tighten or replace damaged fittings and tubing.
Does the fuel pump motor coupling show evidence of metal chips or damaged spring pin?
NO
YES
Replace fuel pump motor coupling/spring pin (WP 0063).
Troubleshoot IAW malfunction 5.
G06452015180

Figure 4. Fuel Pressure Stays at 25 PSI or Less in Heat Auto or Heat Manual.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 4. ASH FLAMES OUT REPEATEDLY (MORE THAN 3 TIMES IN A ROW)

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

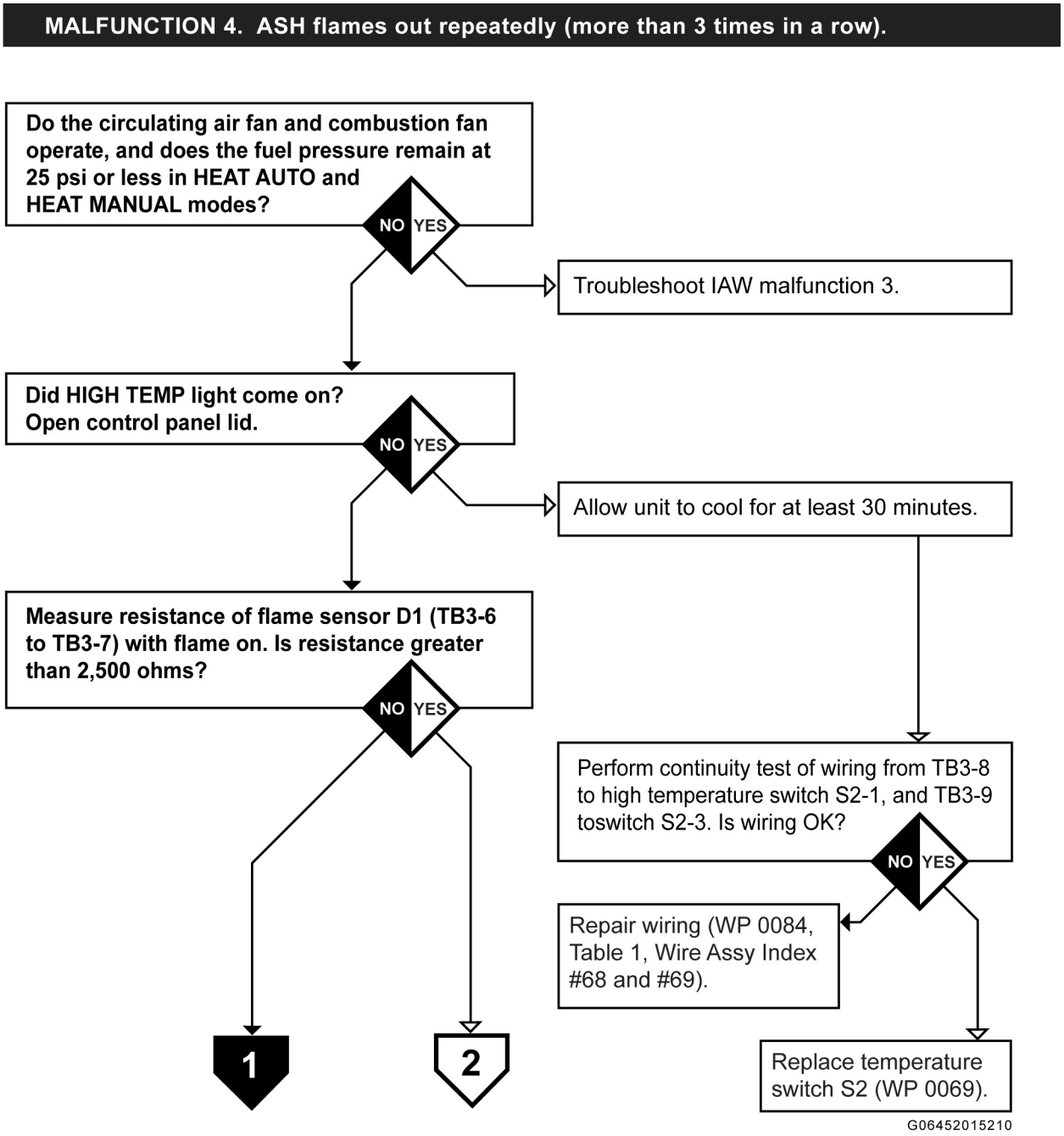

MALFUNCTION 4. ASH flames out repeatedly (more than 3 times in a row).
Do the circulating air fan and combustion fan operate, and does the fuel pressure remain at 25 psi or less in HEAT AUTO and HEAT MANUAL modes?
NO
YES
Troubleshoot IAW malfunction 3.
Did HIGH TEMP light come on? Open control panel lid.
NO
YES
Allow unit to cool for at least 30 minutes.
Measure resistance of flame sensor D1 (TB3-6 to TB3-7) with flame on. Is resistance greater than 2,500 ohms?
NO
YES
Perform continuity test of wiring from TB3-8 to high temperature switch S2-1, and TB3-9 toswitch S2-3. Is wiring OK?
NO
YES
Repair wiring (WP 0084, Table 1, Wire Assy Index #68 and #69).
Replace temperature switch S2 (WP 0069).
1
2
G06452015210

Figure 5. ASH Flames Out Repeatedly (More Than 3 Times in a Row) (Sheet 1 of 2).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

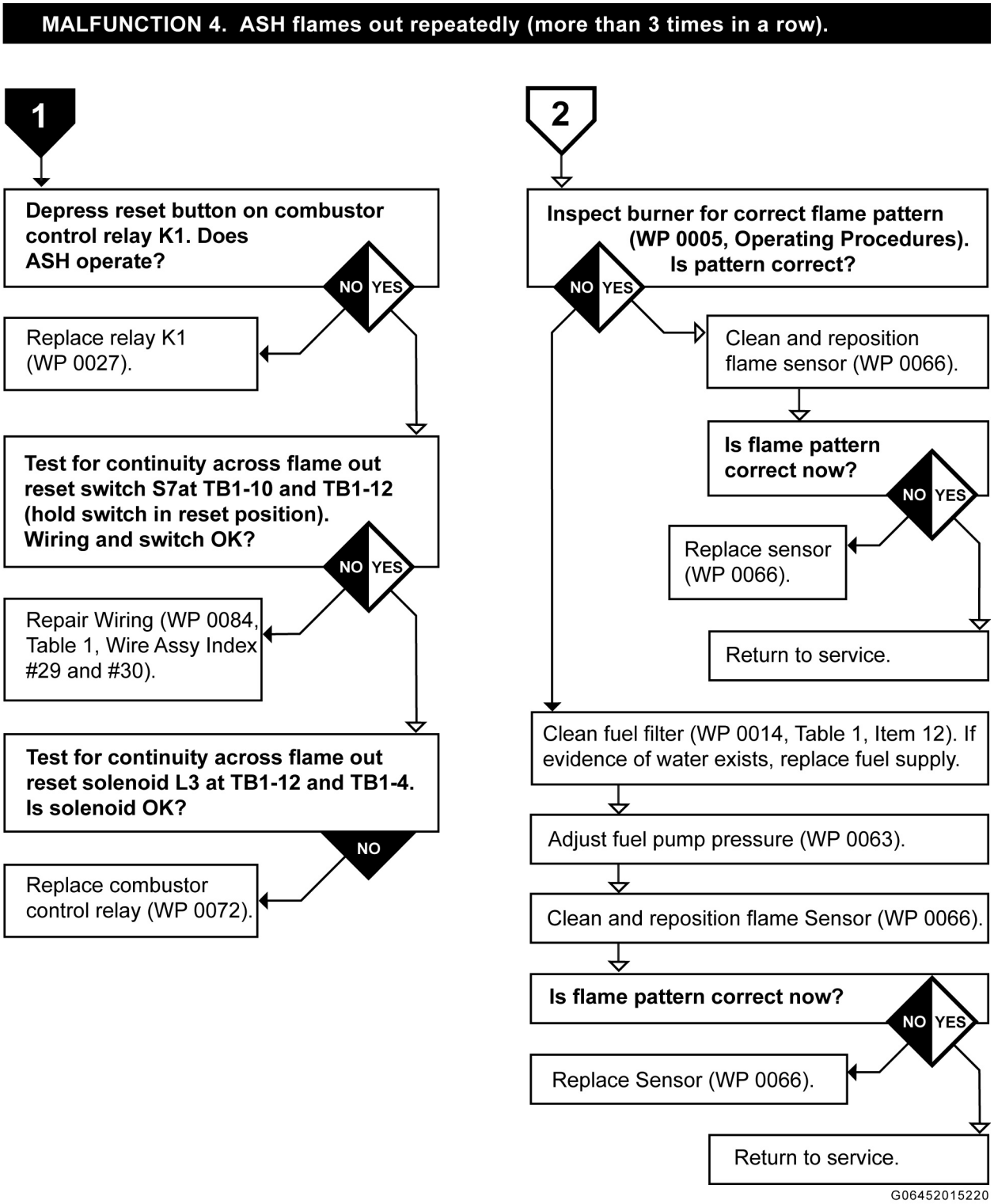

MALFUNCTION 4. ASH flames out repeatedly (more than 3 times in a row).
1
Depress reset button on combustor control relay K1. Does ASH operate?
NO
YES
Replace relay K1 (WP 0027).
Test for continuity across flame out reset switch S7at TB1-10 and TB1-12 (hold switch in reset position). Wiring and switch OK?
NO
YES
Repair Wiring (WP 0084, Table 1, Wire Assy Index #29 and #30).
Test for continuity across flame out reset solenoid L3 at TB1-12 and TB1-4. Is solenoid OK?
NO
Replace combustor control relay (WP 0072).
2
Inspect burner for correct flame pattern (WP 0005, Operating Procedures). Is pattern correct?
NO
YES
Clean and reposition flame sensor (WP 0066).
Is flame pattern correct now?
NO
YES
Replace sensor (WP 0066).
Return to service.
Clean fuel filter (WP 0014, Table 1, Item 12). If evidence of water exists, replace fuel supply.
Adjust fuel pump pressure (WP 0063).
Clean and reposition flame Sensor (WP 0066).
Is flame pattern correct now?
NO
YES
Replace Sensor (WP 0066).
Return to service.
G06452015220

Figure 5. ASH Flames Out Repeatedly (More Than 3 Times in a Row) (Sheet 2 of 2).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 5. NO FUEL PRESSURE INDICATED

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

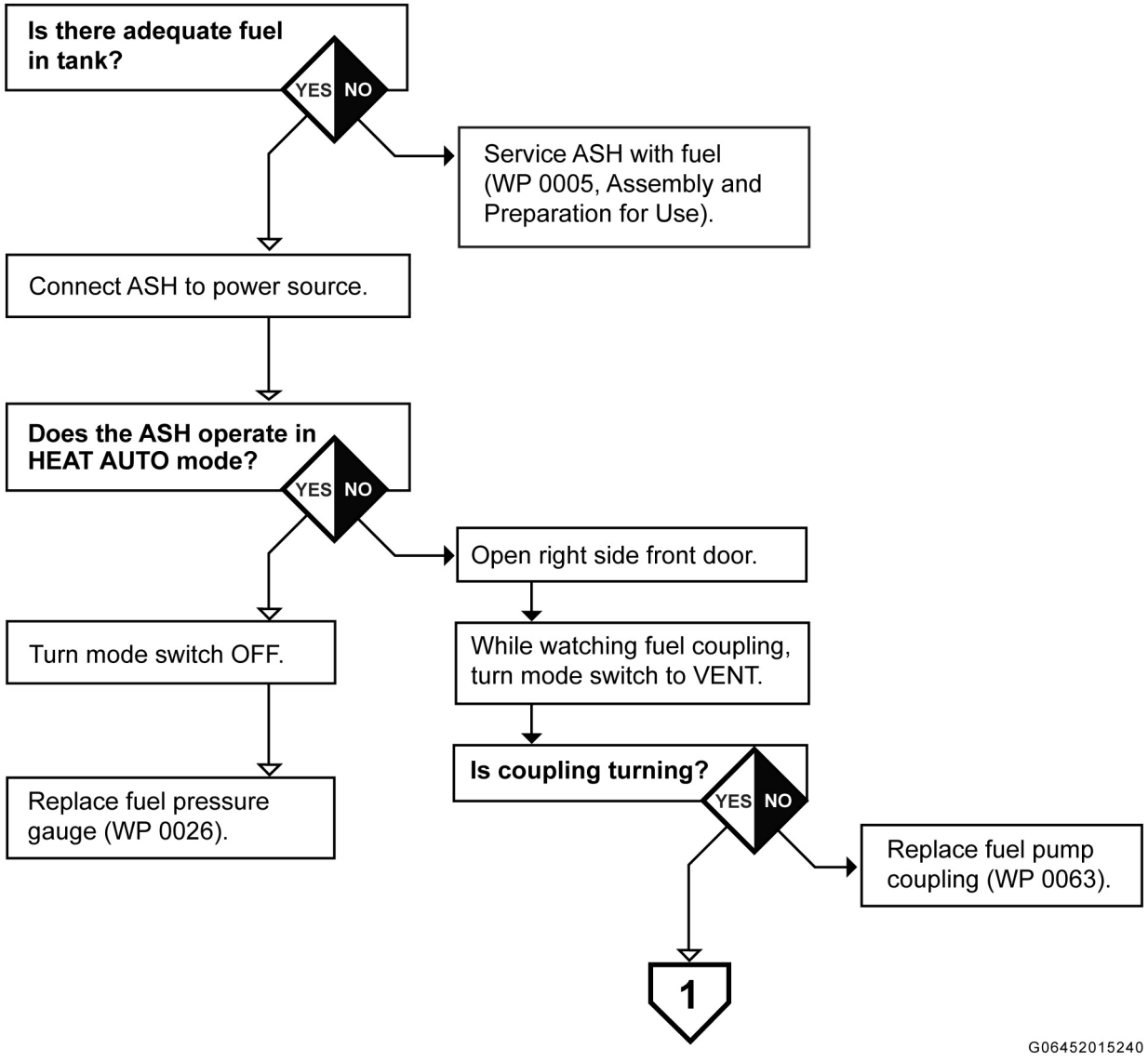


Figure 6. No Fuel Pressure Indicated (Sheet 1 of 2).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

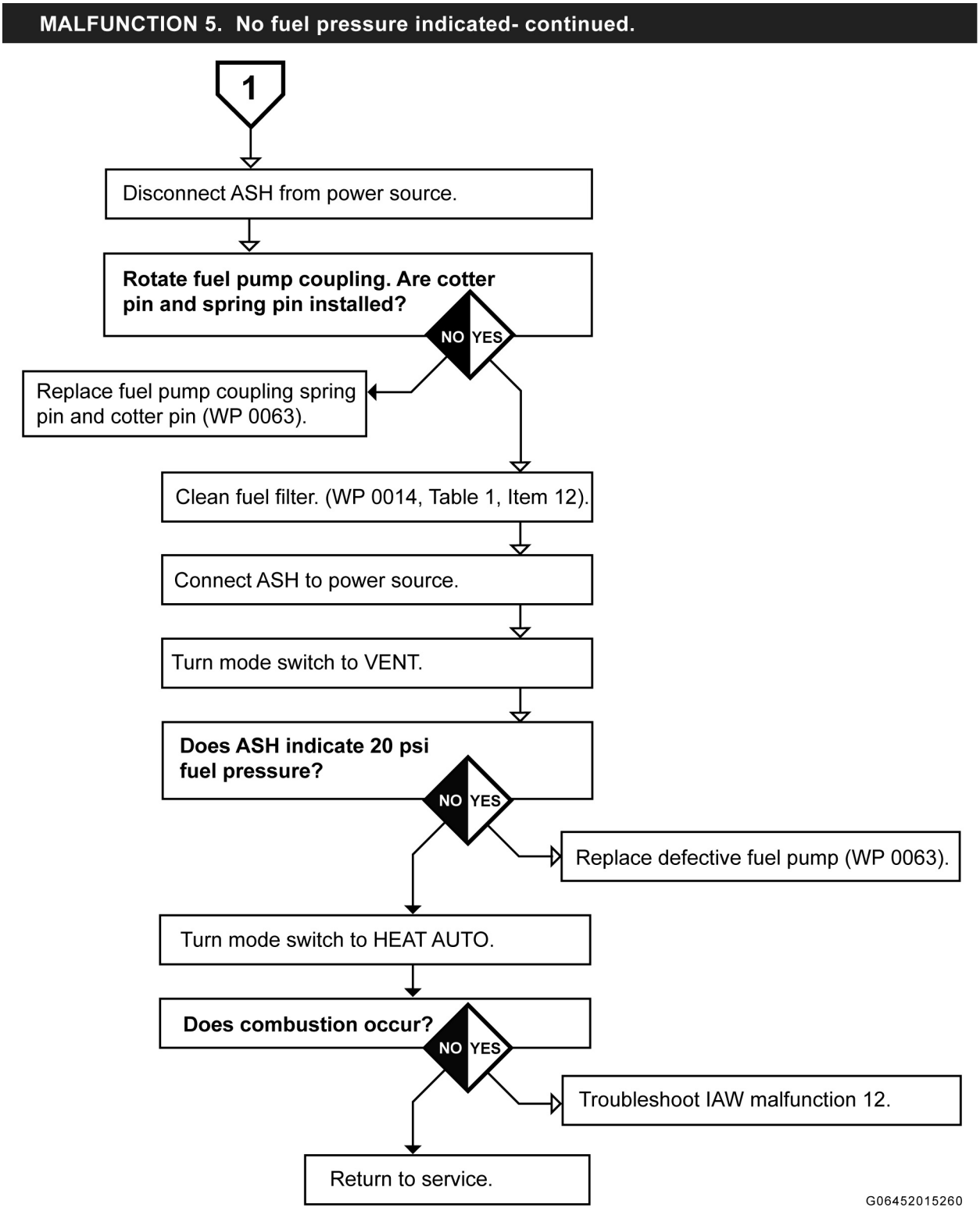

MALFUNCTION 5. No fuel pressure indicated- continued.
1
Disconnect ASH from power source.
Rotate fuel pump coupling. Are cotter pin and spring pin installed?
NO
YES
Replace fuel pump coupling spring pin and cotter pin (WP 0063).
Clean fuel filter. (WP 0014, Table 1, Item 12).
Connect ASH to power source.
Turn mode switch to VENT.
Does ASH indicate 20 psi fuel pressure?
NO
YES
Replace defective fuel pump (WP 0063).
Turn mode switch to HEAT AUTO.
Does combustion occur?
NO
YES
Troubleshoot IAW malfunction 12.
Return to service.
G06452015260

Figure 6. No Fuel Pressure Indicated (Sheet 2 of 2).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 6. LOW FUEL PRESSURE INDICATED

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

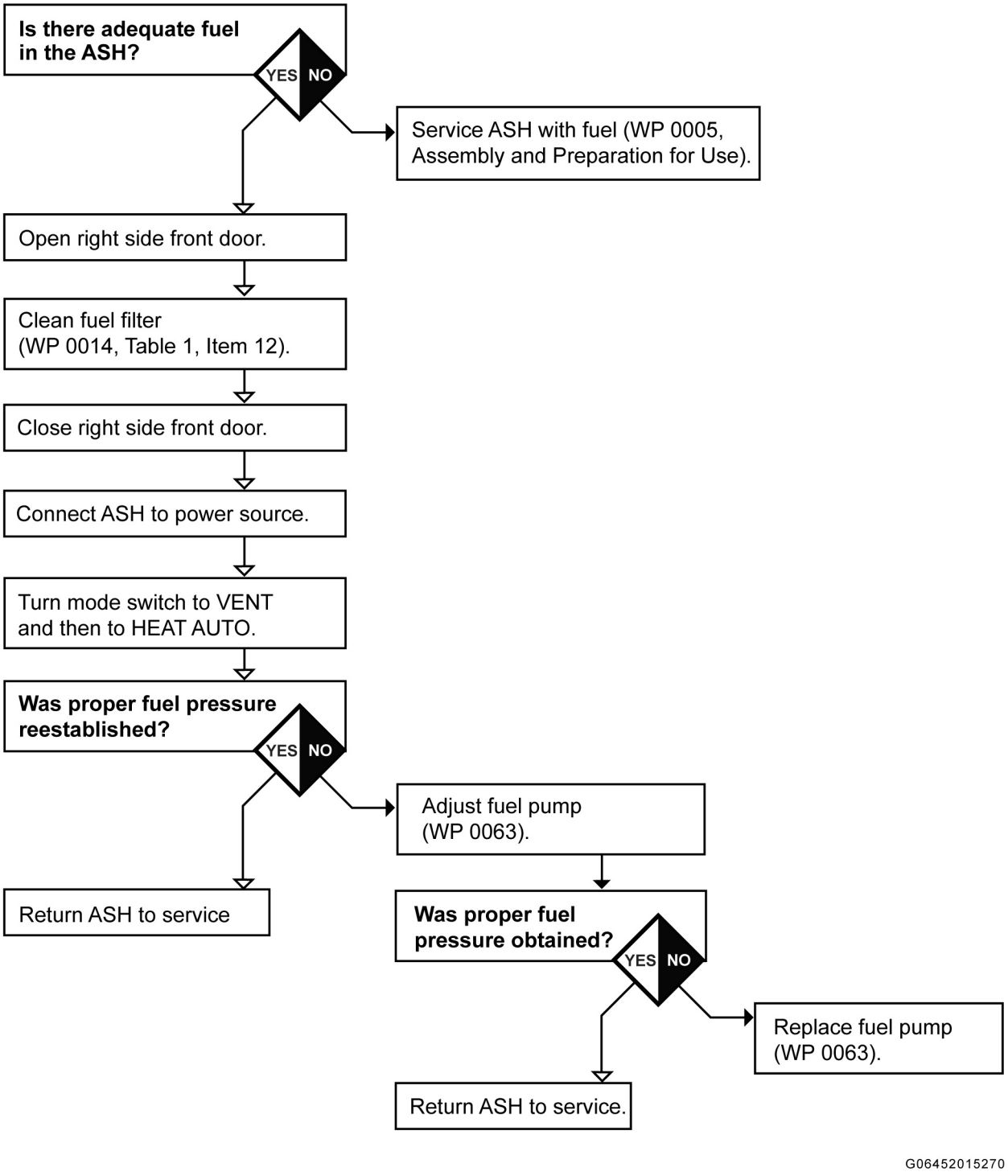

Is there adequate fuel in the ASH?
YES
NO
Service ASH with fuel (WP 0005, Assembly and Preparation for Use).
Open right side front door.
Clean fuel filter (WP 0014, Table 1, Item 12).
Close right side front door.
Connect ASH to power source.
Turn mode switch to VENT and then to HEAT AUTO.
Was proper fuel pressure reestablished?
YES
NO
Adjust fuel pump (WP 0063).
Return ASH to service
Was proper fuel pressure obtained?
YES
NO
Replace fuel pump (WP 0063).
Return ASH to service.
G06452015270

Figure 7. Low Fuel Pressure Indicated.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 7. Excessive black smoke in exhaust.

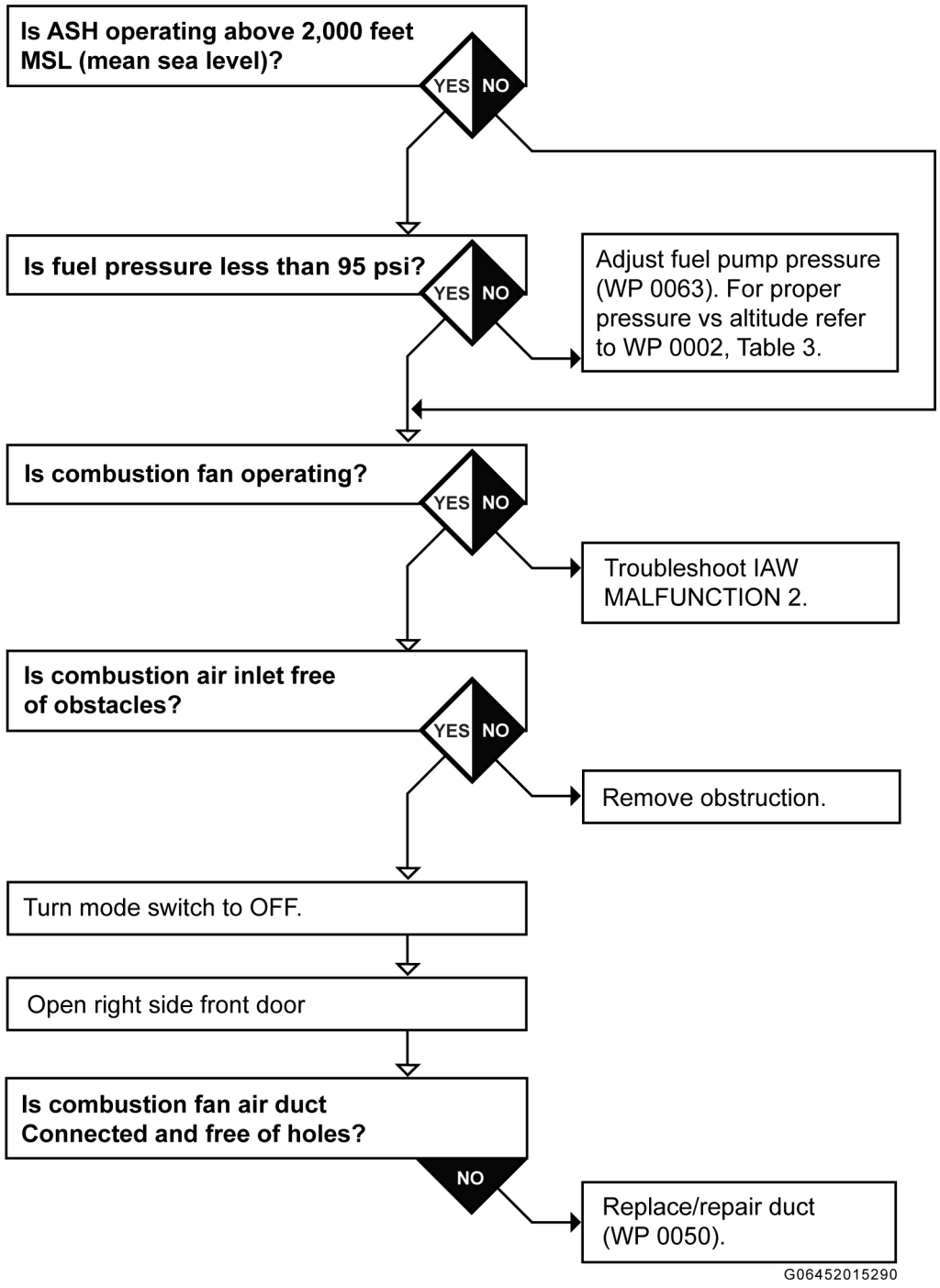

Is ASH operating above 2,000 feet MSL (mean sea level)?
YES
NO
Is fuel pressure less than 95 psi?
YES
NO
Adjust fuel pump pressure (WP 0063). For proper pressure vs altitude refer to WP 0002, Table 3.
Is combustion fan operating?
YES
NO
Troubleshoot IAW MALFUNCTION 2.
Is combustion air inlet free of obstacles?
YES
NO
Remove obstruction.
Turn mode switch to OFF.
Open right side front door
Is combustion fan air duct Connected and free of holes?
NO
Replace/repair duct (WP 0050).
G06452015290

Figure 8. Excessive Black Smoke in Exhaust.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 8. FAN MOTOR SLOWS DOWN, INDICATOR LIGHTS DIM

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

MALFUNCTION 8. Fan motor slows down, indicator lights dim.

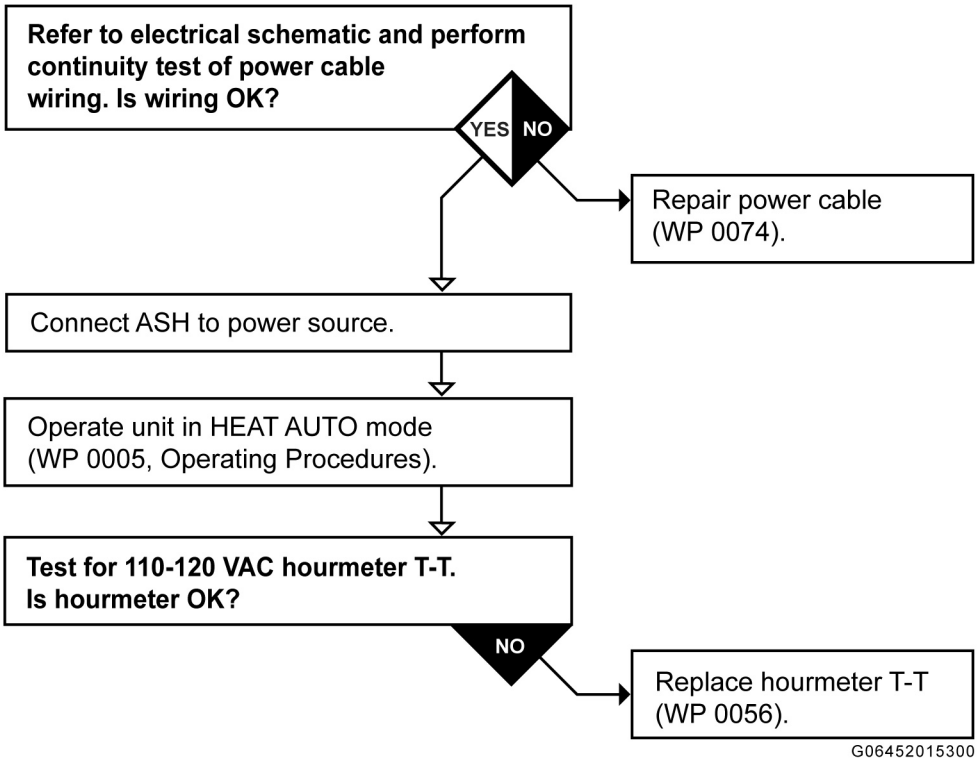

Refer to electrical schematic and perform continuity test of power cable wiring. Is wiring OK?
YES
NO
Repair power cable (WP 0074).
Connect ASH to power source.
Operate unit in HEAT AUTO mode (WP 0005, Operating Procedures).
Test for 110-120 VAC hourmeter T-T. Is hourmeter OK?
NO
Replace hourmeter T-T (WP 0056).
G06452015300

Figure 9. Fan Motor Slows Down; Indicator Lights Dim.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 9. IMPROPER/NO SPARK IN IGNITER

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

NOTE

A straight blue spark inside the burner must be present in all modes (VENT, AUTO, MANUAL) of heater operation to have combustion. Troubleshoot ignition system if spark is not visible or appears weak.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

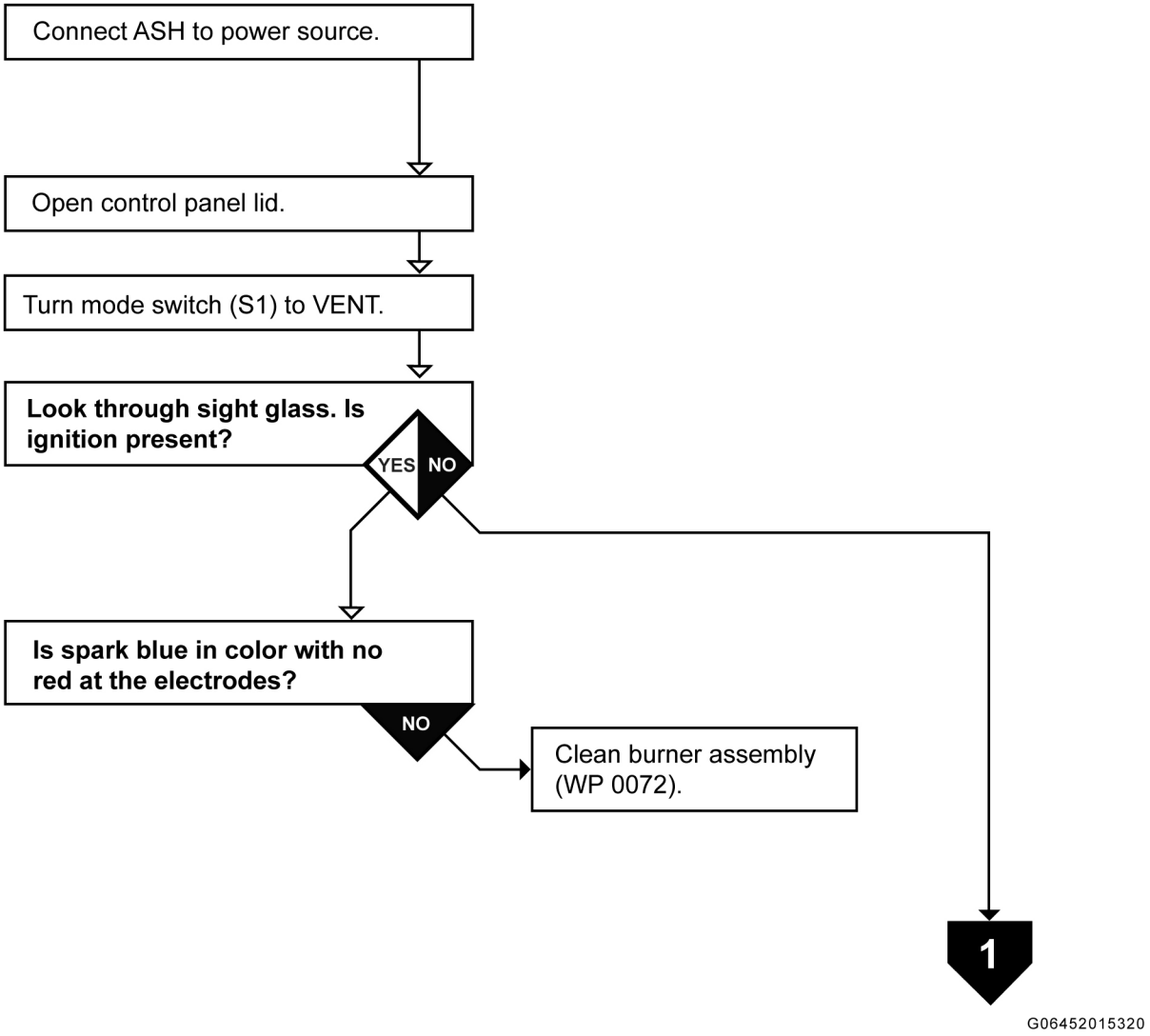


Figure 10. Improper/No Spark in Igniter (Sheet 1 of 3).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

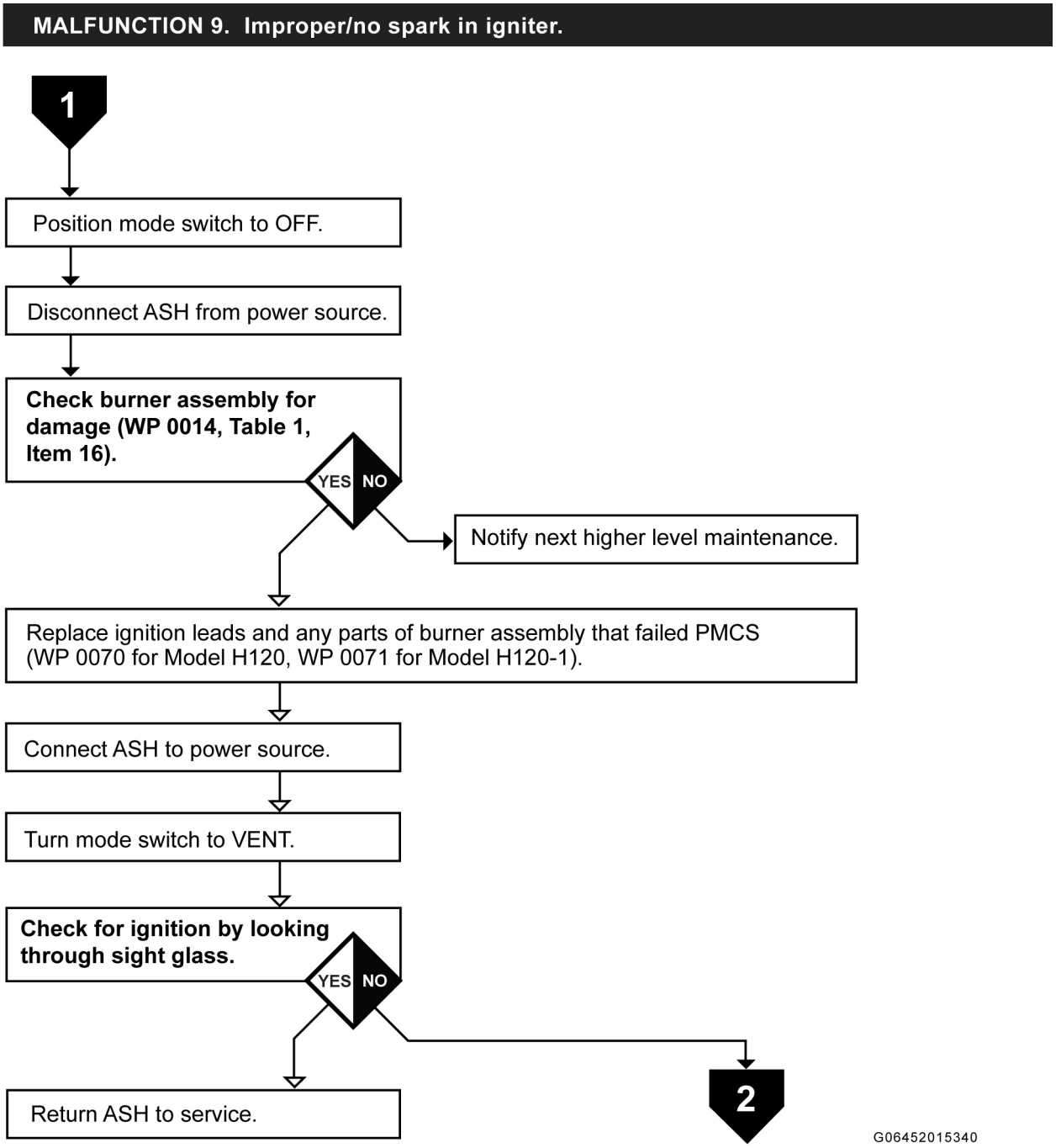

MALFUNCTION 9. Improper/no spark in igniter.
1
Position mode switch to OFF.
Disconnect ASH from power source.
Check burner assembly for damage (WP 0014, Table 1, Item 16).
YES
NO
Notify next higher level maintenance.
Replace ignition leads and any parts of burner assembly that failed PMCS (WP 0070 for Model H120, WP 0071 for Model H120-1).
Connect ASH to power source.
Turn mode switch to VENT.
Check for ignition by looking through sight glass.
YES
NO
Return ASH to service.
2
G06452015340

Figure 10. Improper/No Spark in Igniter (Sheet 2 of 3).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

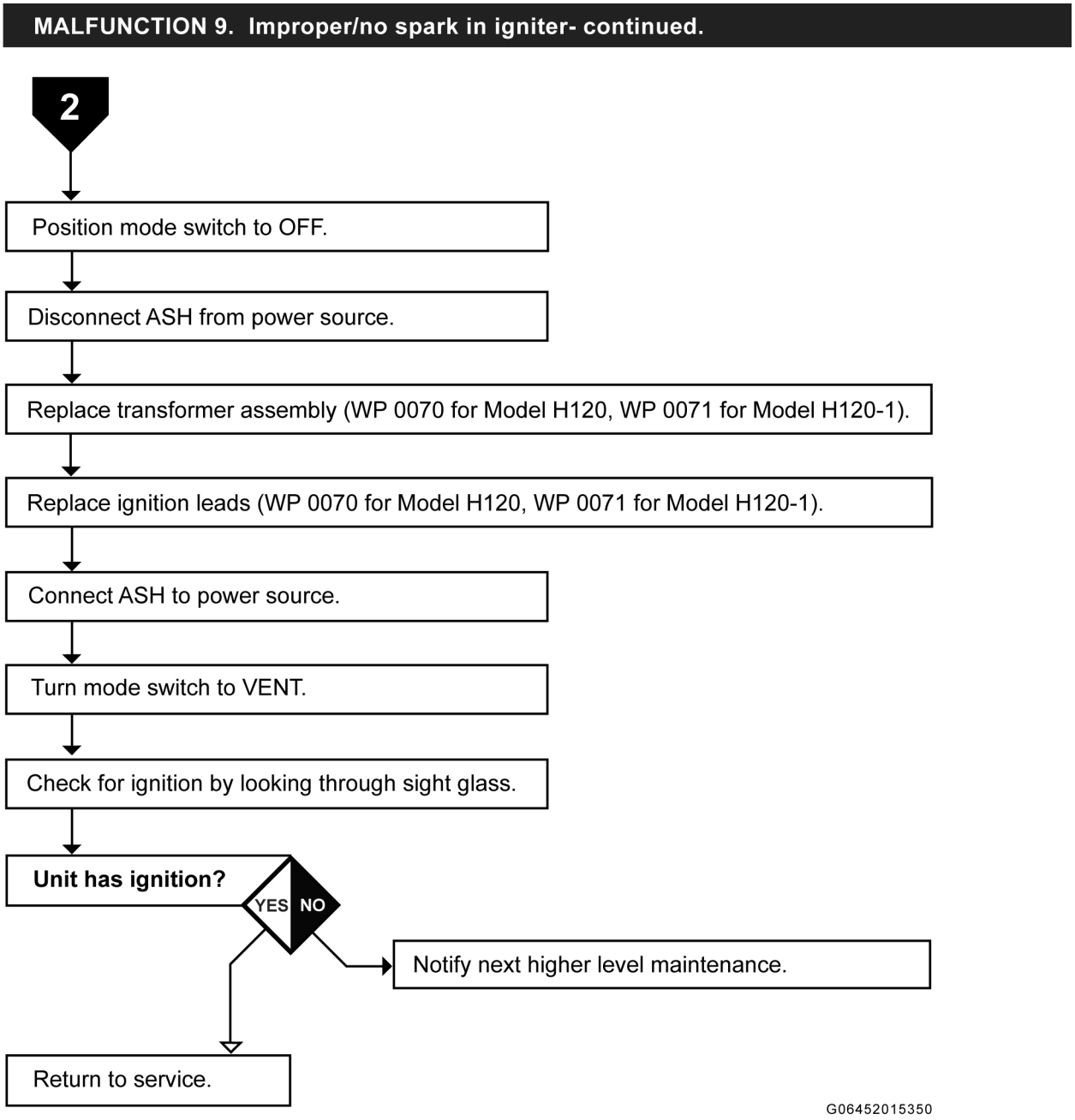

MALFUNCTION 9. Improper/no spark in igniter- continued.
2
Position mode switch to OFF.
Disconnect ASH from power source.
Replace transformer assembly (WP 0070 for Model H120, WP 0071 for Model H120-1).
Replace ignition leads (WP 0070 for Model H120, WP 0071 for Model H120-1).
Connect ASH to power source.
Turn mode switch to VENT.
Check for ignition by looking through sight glass.
Unit has ignition?
YES
NO
Notify next higher level maintenance.
Return to service.
G06452015350

Figure 10. Improper/No Spark in Igniter (Sheet 3 of 3).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 10. Unit backfires or rumbles in AUTO and /or MANUAL HEAT modes.

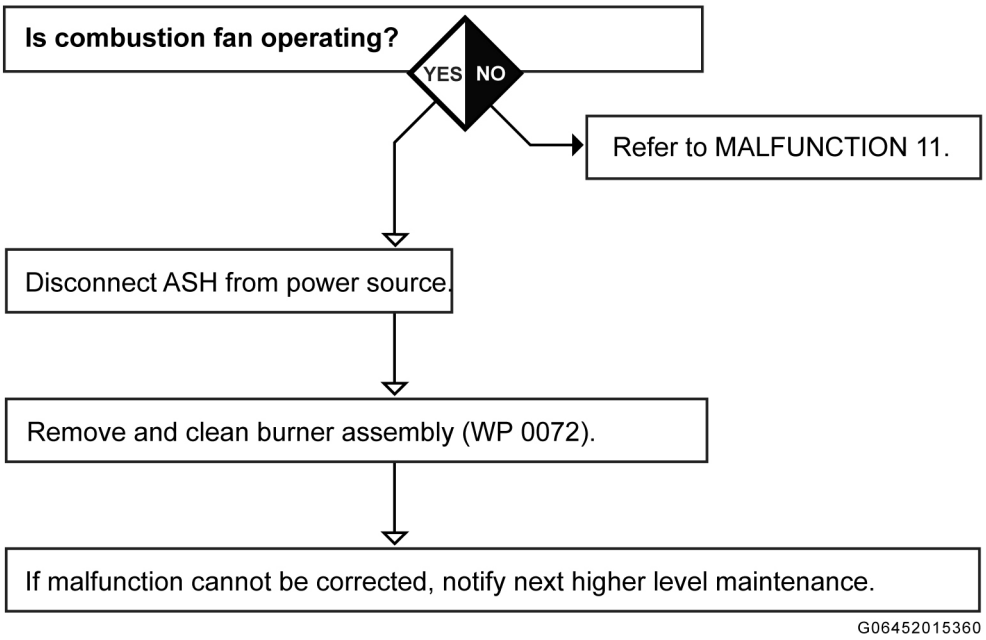

Is combustion fan operating?
YES
NO
Refer to MALFUNCTION 11.
Disconnect ASH from power source.
Remove and clean burner assembly (WP 0072).
If malfunction cannot be corrected, notify next higher level maintenance.
G06452015360

Figure 11. ASH Backfires or Rumbles in Heat Auto and/or Heat Manual Modes.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 11. COMBUSTION FAN DOES NOT OPERATE (BLACK EXHAUST SMOKE AND LOUD RUMBLE)

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

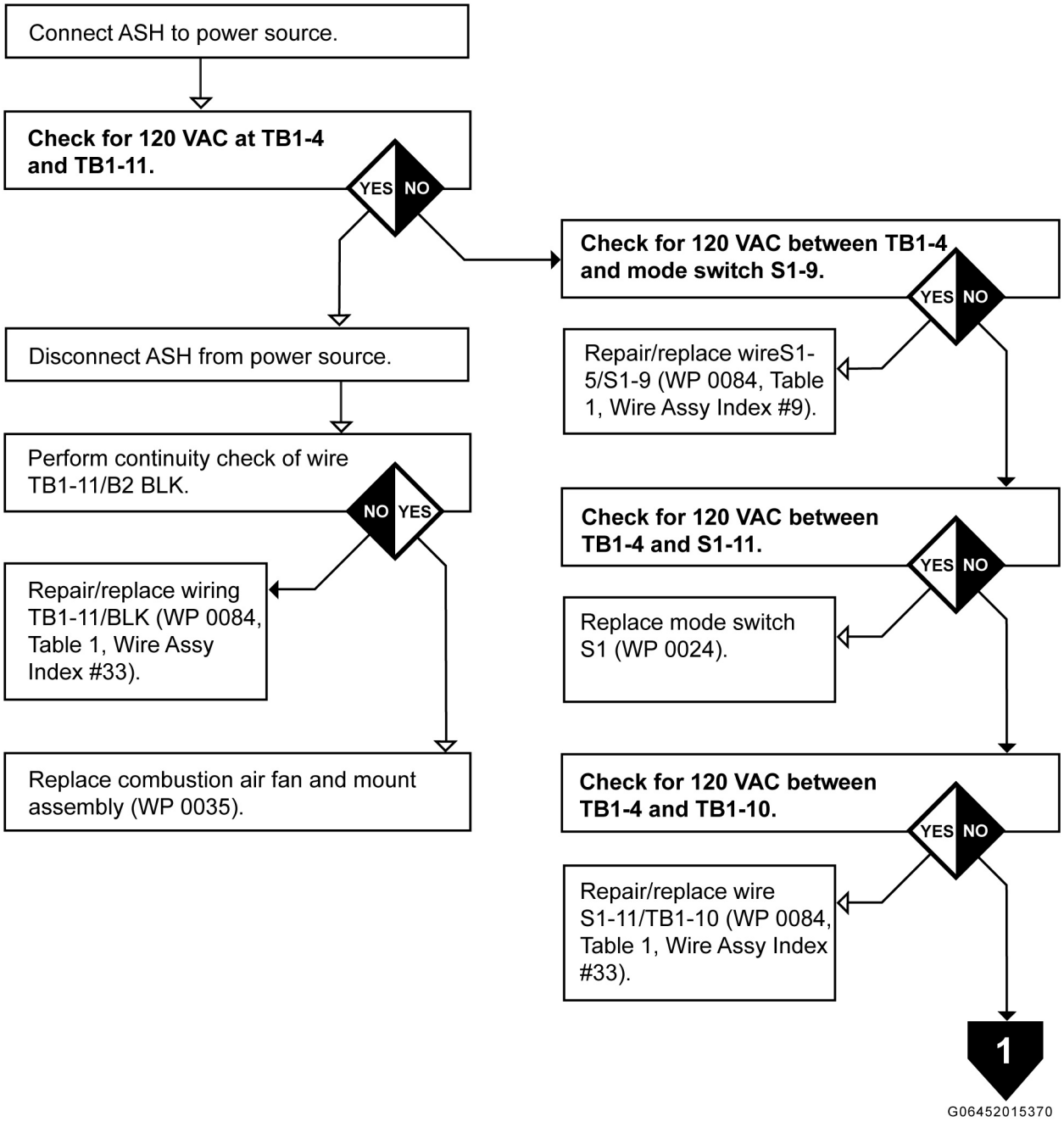

Connect ASH to power source.
Check for 120 VAC at TB1-4 and TB1-11.
YES
NO
Disconnect ASH from power source.
Perform continuity check of wire TB1-11/B2 BLK.
NO
YES
Repair/replace wiring TB1-11/BLK (WP 0084, Table 1, Wire Assy Index #33).
Replace combustion air fan and mount assembly (WP 0035).
Check for 120 VAC between TB1-4 and mode switch S1-9.
YES
NO
Repair/replace wireS1-5/S1-9 (WP 0084, Table 1, Wire Assy Index #9).
Check for 120 VAC between TB1-4 and S1-11.
YES
NO
Replace mode switch S1 (WP 0024).
Check for 120 VAC between TB1-4 and TB1-10.
YES
NO
Repair/replace wire S1-11/TB1-10 (WP 0084, Table 1, Wire Assy Index #33).
1
G06452015370

Figure 12. Combustion Fan Does Not Operate (Black Exhaust Smoke and Loud Rumble) (Sheet 1 of 2).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

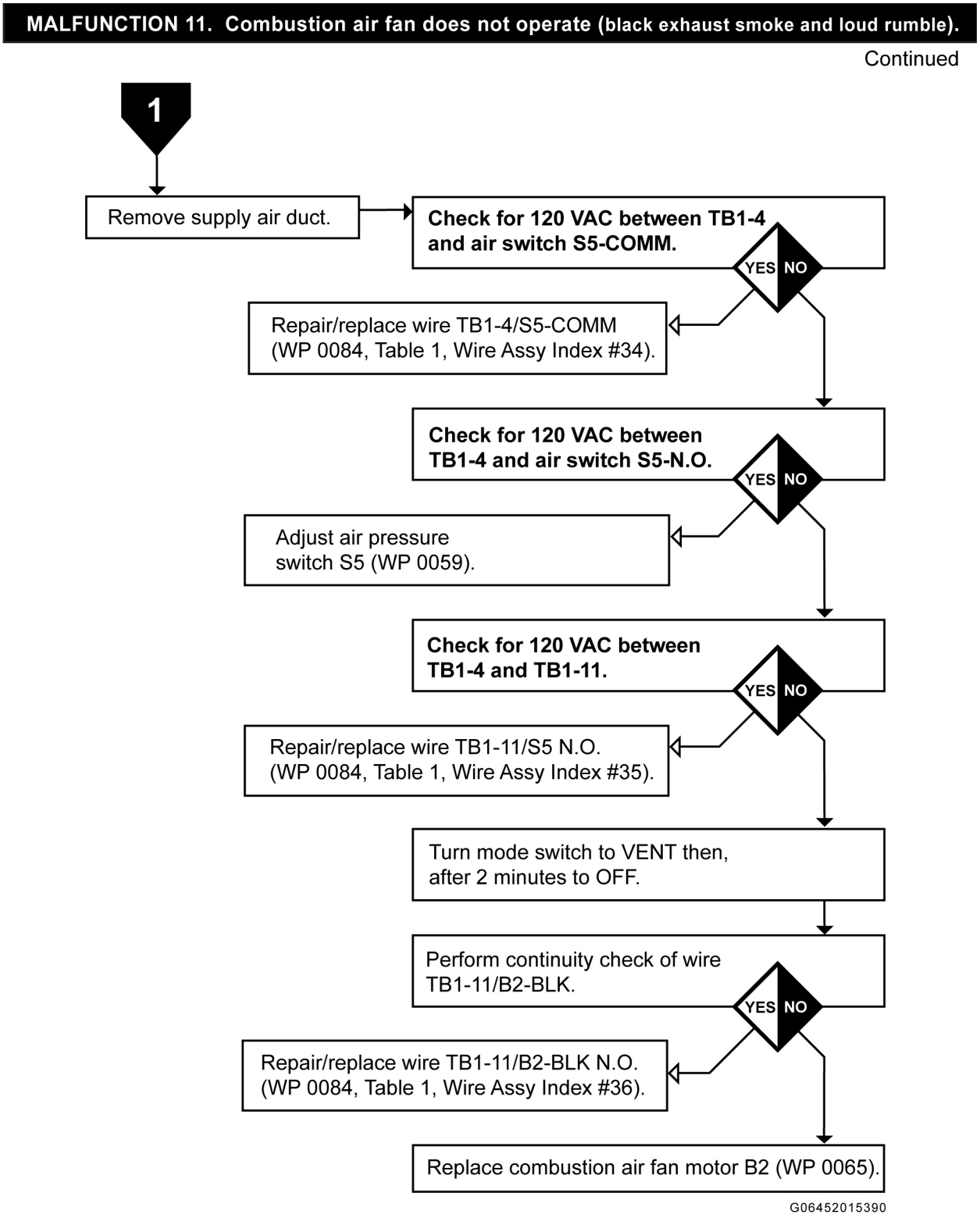

MALFUNCTION 11. Combustion air fan does not operate (black exhaust smoke and loud rumble).
Continued
1
Remove supply air duct.
Check for 120 VAC between TB1-4 and air switch S5-COMM.
YES
NO
Repair/replace wire TB1-4/S5-COMM (WP 0084, Table 1, Wire Assy Index #34).
Check for 120 VAC between TB1-4 and air switch S5-N.O.
YES
NO
Adjust air pressure switch S5 (WP 0059).
Check for 120 VAC between TB1-4 and TB1-11.
YES
NO
Repair/replace wire TB1-11/S5 N.O. (WP 0084, Table 1, Wire Assy Index #35).
Turn mode switch to VENT then, after 2 minutes to OFF.
Perform continuity check of wire TB1-11/B2-BLK.
YES
NO
Repair/replace wire TB1-11/B2-BLK N.O. (WP 0084, Table 1, Wire Assy Index #36).
Replace combustion air fan motor B2 (WP 0065).
G06452015390

Figure 12. Combustion Fan Does Not Operate (Black Exhaust Smoke and Loud Rumble) (Sheet 2 of 2).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 12. NO COMBUSTION IN HEAT AUTO MODE

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

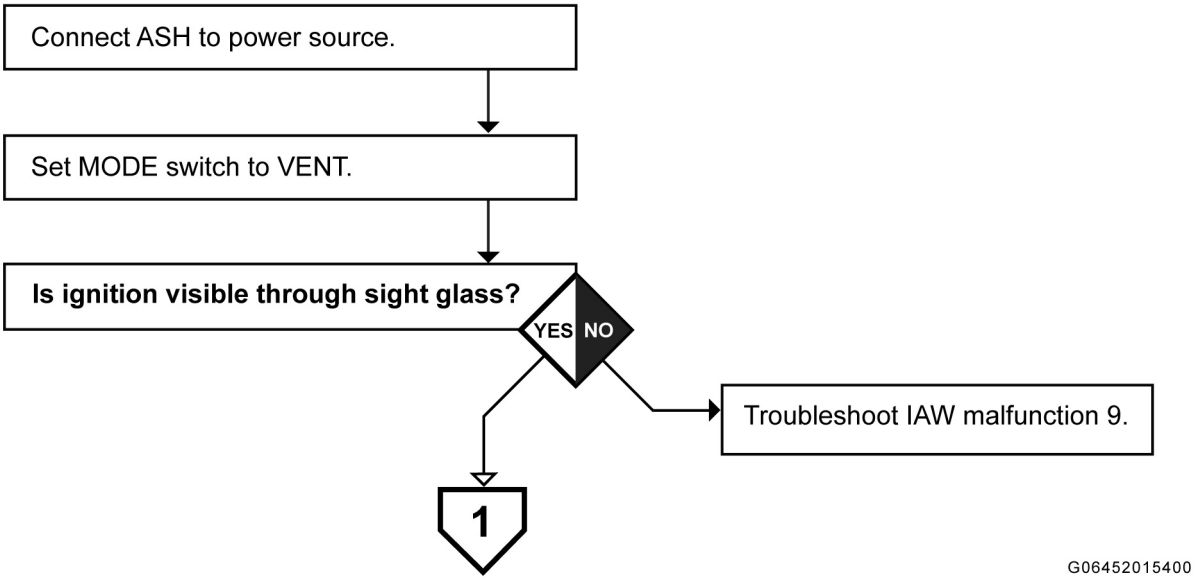


Figure 13. No Combustion in Heat Auto Mode (Sheet 1 of 6).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 12. No Combustion in HEAT AUTO MODE- continued.

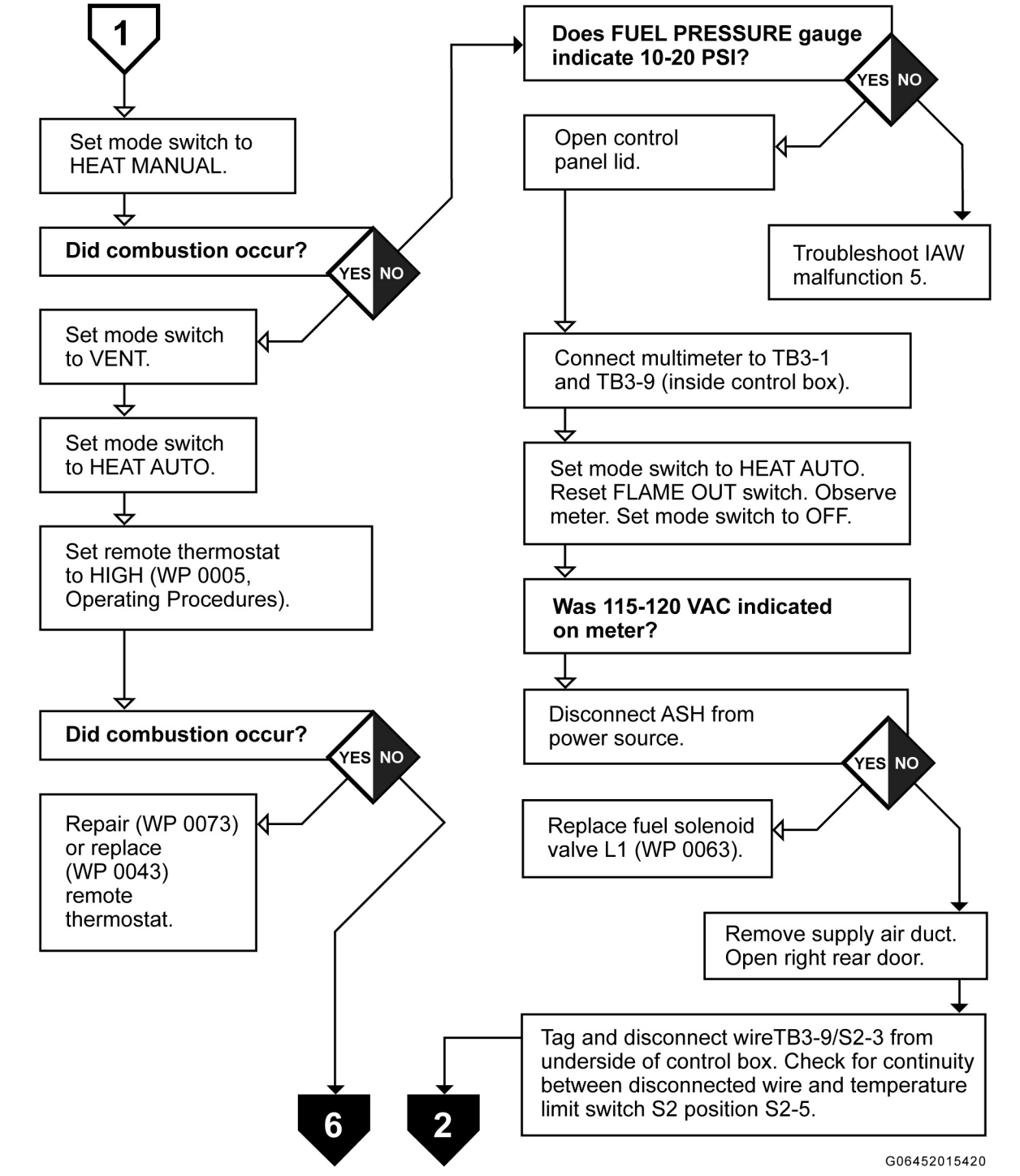

1
Set mode switch to HEAT MANUAL.
Did combustion occur?
YES NO
Set mode switch to VENT.
Set mode switch to HEAT AUTO.
Set remote thermostat to HIGH (WP 0005, Operating Procedures).
Did combustion occur?
YES NO
Repair (WP 0073) or replace (WP 0043) remote thermostat.
6
Does FUEL PRESSURE gauge indicate 10-20 PSI?
YES NO
Open control panel lid.
Troubleshoot IAW malfunction 5.
Connect multimeter to TB3-1 and TB3-9 (inside control box).
Set mode switch to HEAT AUTO. Reset FLAME OUT switch. Observe meter. Set mode switch to OFF.
Was 115-120 VAC indicated on meter?
Disconnect ASH from power source.
YES NO
Replace fuel solenoid valve L1 (WP 0063).
Remove supply air duct. Open right rear door.
Tag and disconnect wireTB3-9/S2-3 from underside of control box. Check for continuity between disconnected wire and temperature limit switch S2 position S2-5.
2
G06452015420

Figure 13. No Combustion in Heat Auto Mode (Sheet 2 of 6).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

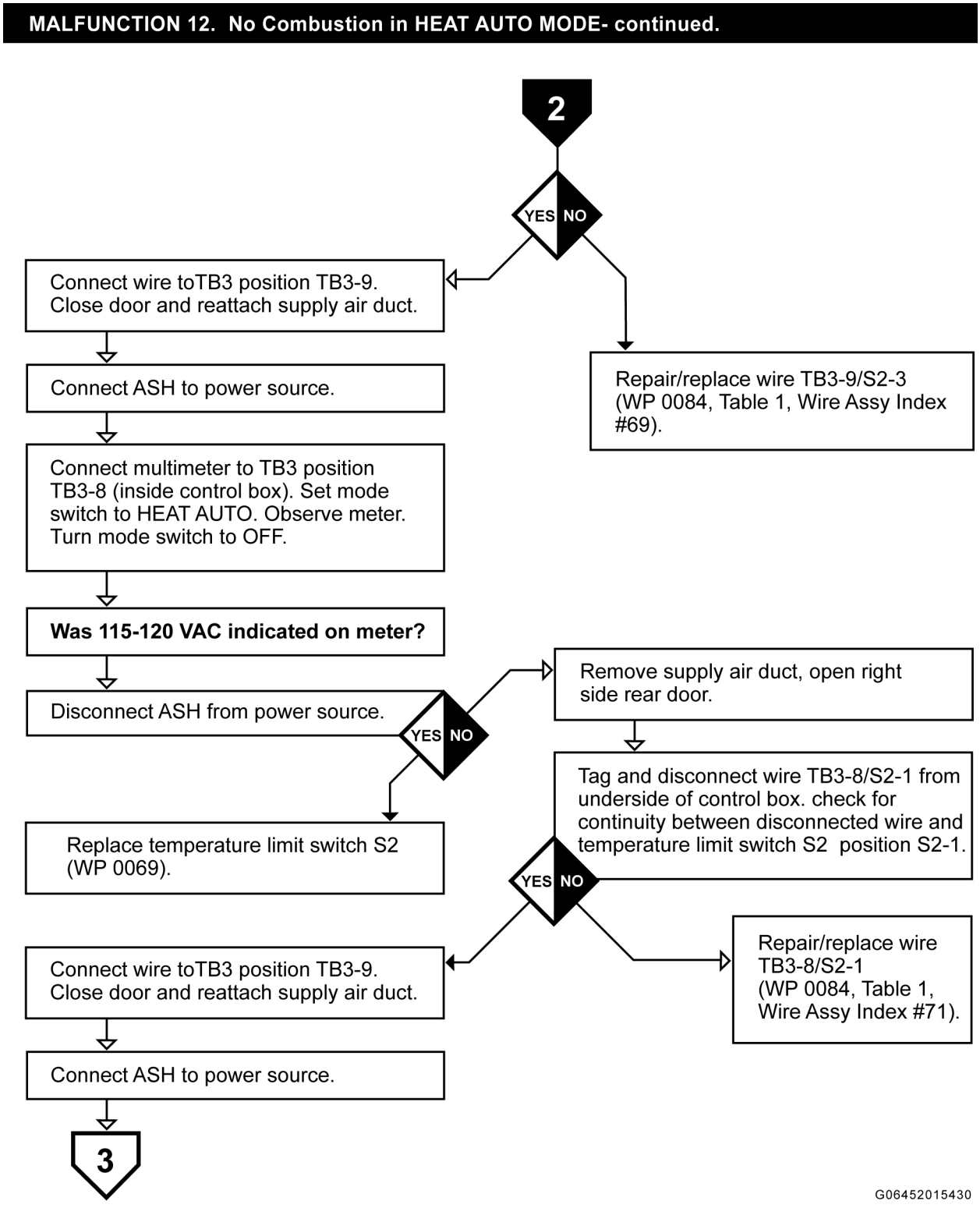

MALFUNCTION 12. No Combustion in HEAT AUTO MODE- continued.
2
YES NO
Connect wire toTB3 position TB3-9. Close door and reattach supply air duct.
Repair/replace wire TB3-9/S2-3 (WP 0084, Table 1, Wire Assy Index #69).
Connect ASH to power source.
Connect multimeter to TB3 position TB3-8 (inside control box). Set mode switch to HEAT AUTO. Observe meter. Turn mode switch to OFF.
Was 115-120 VAC indicated on meter?
Disconnect ASH from power source.
YES NO
Remove supply air duct, open right side rear door.
Tag and disconnect wire TB3-8/S2-1 from underside of control box. check for continuity between disconnected wire and temperature limit switch S2 position S2-1.
Replace temperature limit switch S2 (WP 0069).
YES NO
Repair/replace wire TB3-8/S2-1 (WP 0084, Table 1, Wire Assy Index #71).
Connect wire toTB3 position TB3-9. Close door and reattach supply air duct.
Connect ASH to power source.
3
G06452015430

Figure 13. No Combustion in Heat Auto Mode (Sheet 3 of 6).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

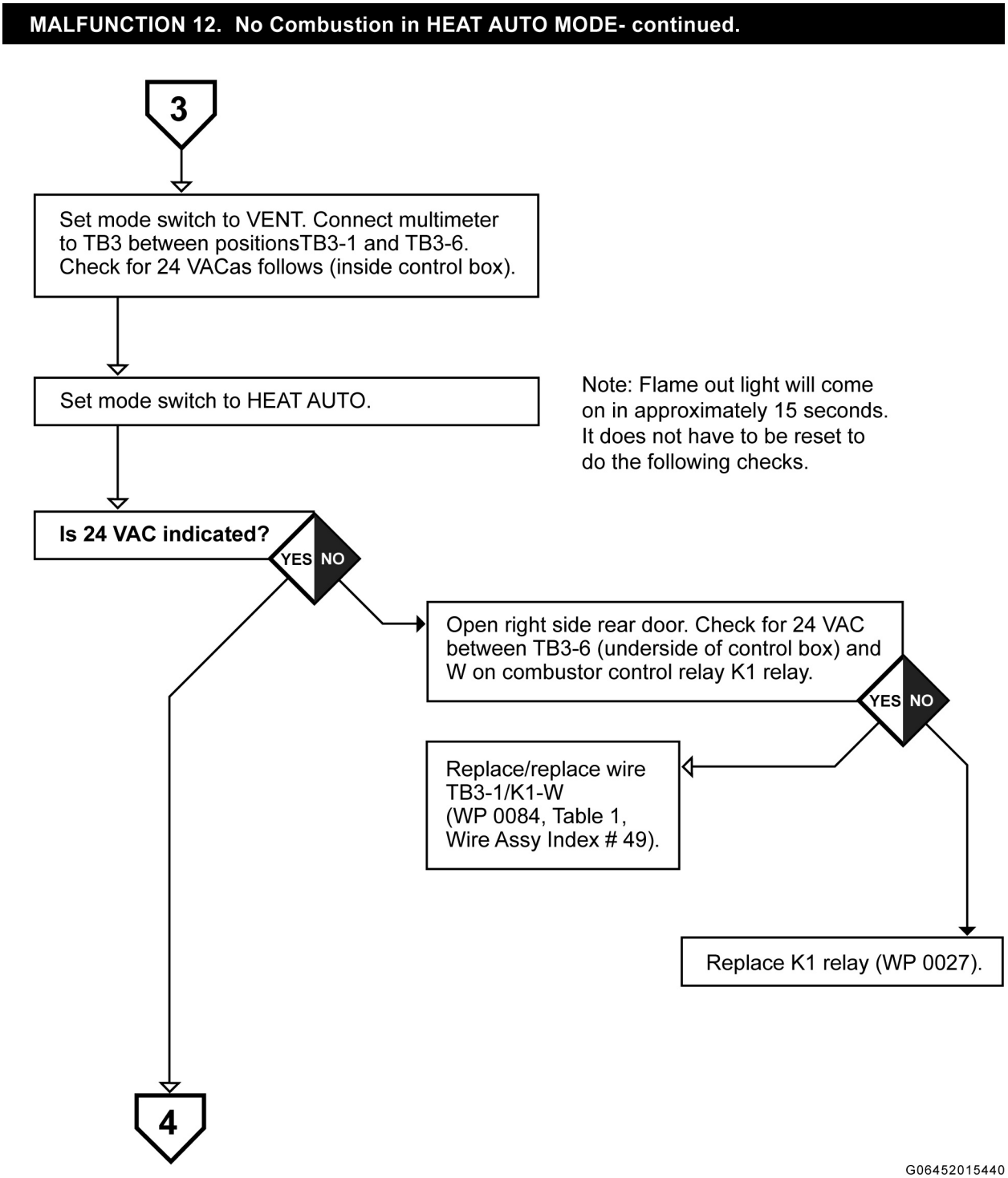

MALFUNCTION 12. No Combustion in HEAT AUTO MODE- continued.
3
Set mode switch to VENT. Connect multimeter to TB3 between positionsTB3-1 and TB3-6. Check for 24 VACas follows (inside control box).
Set mode switch to HEAT AUTO.
Note: Flame out light will come on in approximately 15 seconds. It does not have to be reset to do the following checks.
Is 24 VAC indicated?
YES
NO
Open right side rear door. Check for 24 VAC between TB3-6 (underside of control box) and W on combustor control relay K1 relay.
YES
NO
Replace/replace wire TB3-1/K1-W (WP 0084, Table 1, Wire Assy Index # 49).
Replace K1 relay (WP 0027).
4
G06452015440

Figure 13. No Combustion in Heat Auto Mode (Sheet 4 of 6).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

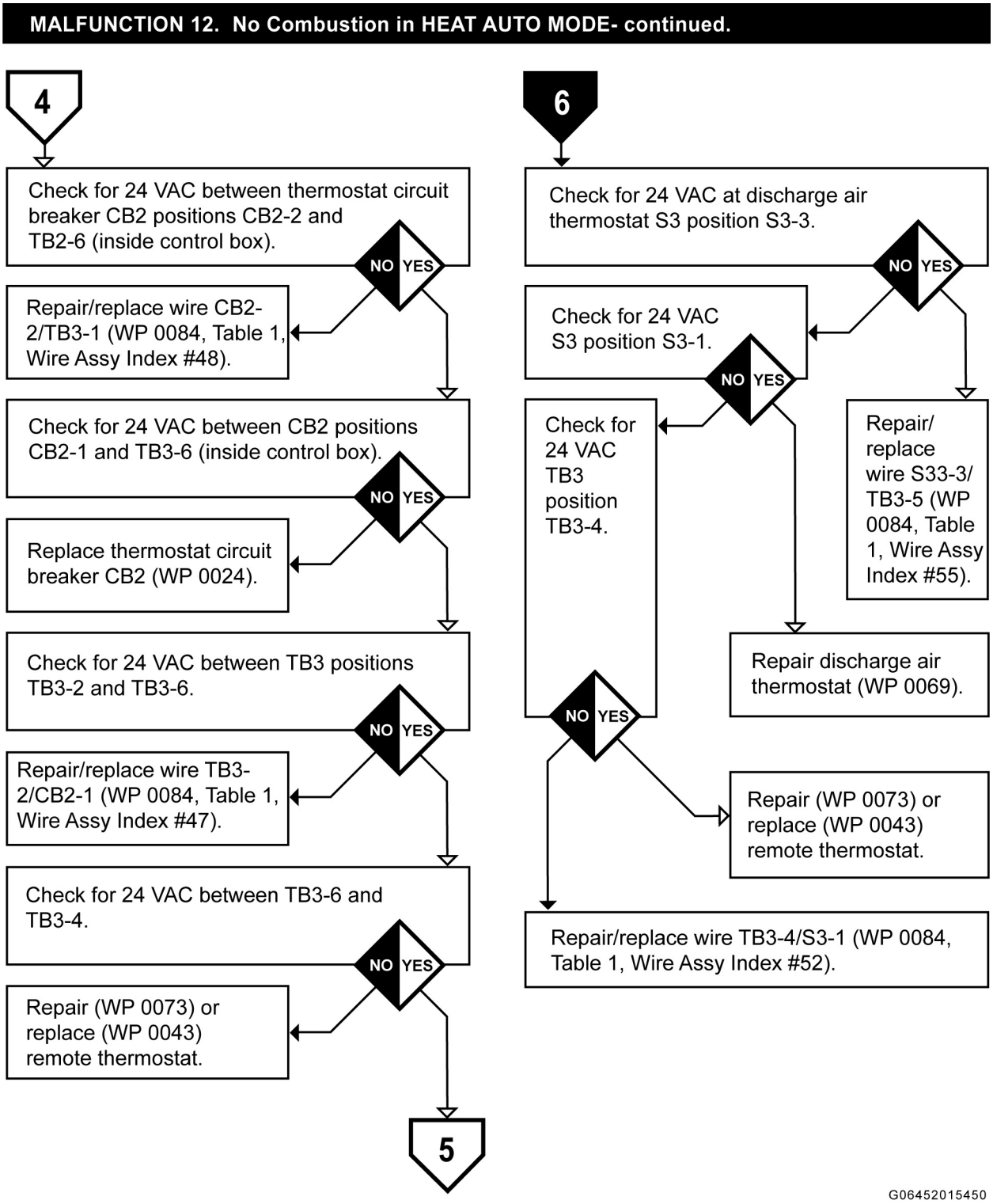

MALFUNCTION 12. No Combustion in HEAT AUTO MODE- continued.
4
Check for 24 VAC between thermostat circuit breaker CB2 positions CB2-2 and TB2-6 (inside control box).
NO YES
Repair/replace wire CB2-2/TB3-1 (WP 0084, Table 1, Wire Assy Index #48).
Check for 24 VAC between CB2 positions CB2-1 and TB3-6 (inside control box).
NO YES
Replace thermostat circuit breaker CB2 (WP 0024).
Check for 24 VAC between TB3 positions TB3-2 and TB3-6.
NO YES
Repair/replace wire TB3-2/CB2-1 (WP 0084, Table 1, Wire Assy Index #47).
Check for 24 VAC between TB3-6 and TB3-4.
NO YES
Repair (WP 0073) or replace (WP 0043) remote thermostat.
5
6
Check for 24 VAC at discharge air thermostat S3 position S3-3.
NO YES
Check for 24 VAC S3 position S3-1.
NO YES
Check for 24 VAC TB3 position TB3-4.
NO YES
Repair/replace wire TB3-4/S3-1 (WP 0084, Table 1, Wire Assy Index #52).
Repair (WP 0073) or replace (WP 0043) remote thermostat.
Repair discharge air thermostat (WP 0069).
Repair/replace wire S33-3/TB3-5 (WP 0084, Table 1, Wire Assy Index #55).
G06452015450

Figure 13. No Combustion in Heat Auto Mode (Sheet 5 of 6).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 12. No Combustion in HEAT AUTO MODE- continued.

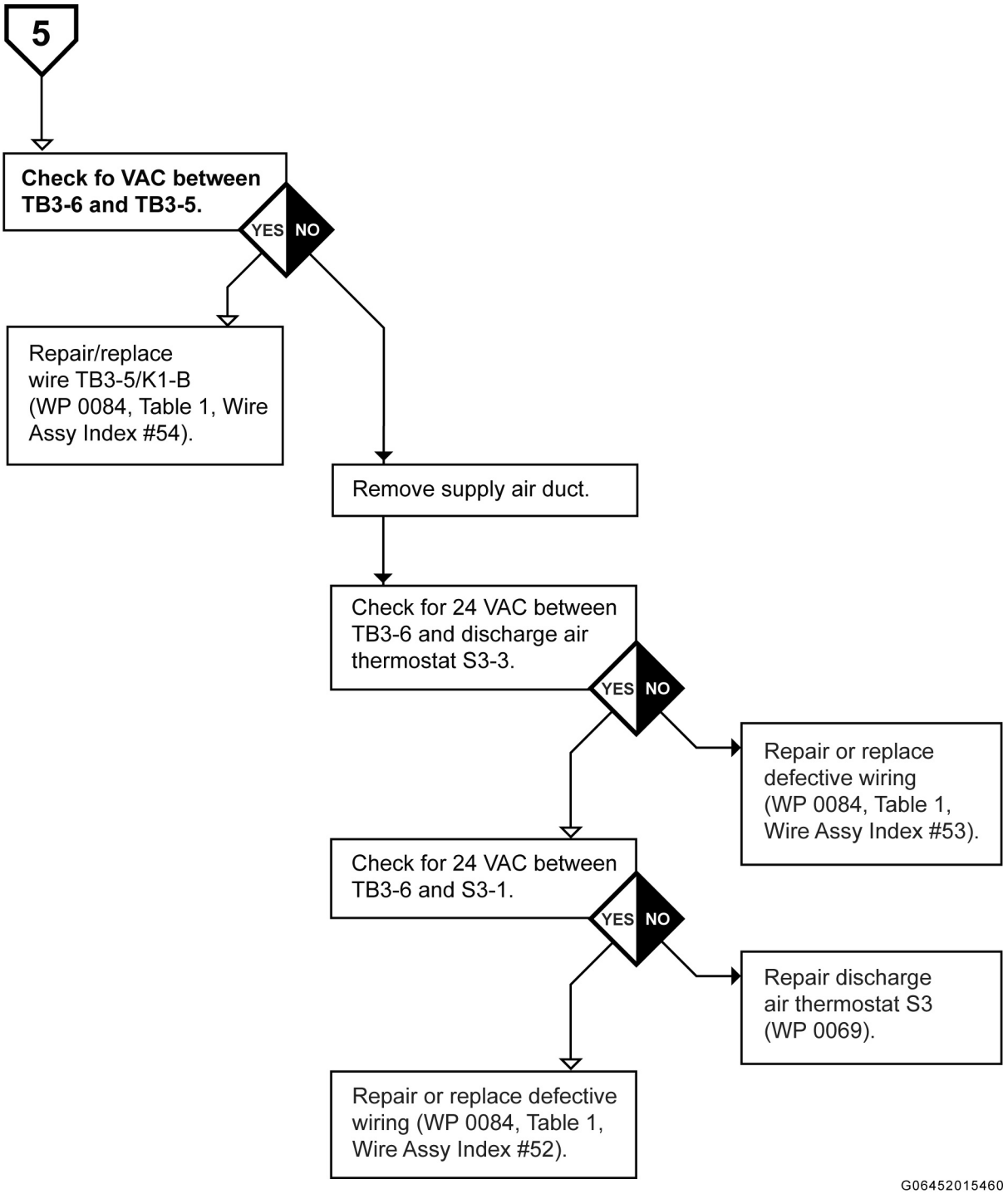

5
Check fo VAC between TB3-6 and TB3-5.
YES
NO
Repair/replace wire TB3-5/K1-B (WP 0084, Table 1, Wire Assy Index #54).
Remove supply air duct.
Check for 24 VAC between TB3-6 and discharge air thermostat S3-3.
YES
NO
Repair or replace defective wiring (WP 0084, Table 1, Wire Assy Index #53).
Check for 24 VAC between TB3-6 and S3-1.
YES
NO
Repair discharge air thermostat S3 (WP 0069).
Repair or replace defective wiring (WP 0084, Table 1, Wire Assy Index #52).
G06452015460

Figure 13. No Combustion in Heat Auto Mode (Sheet 6 of 6).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 13. NO COMBUSTION IN HEAT MANUAL MODE

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

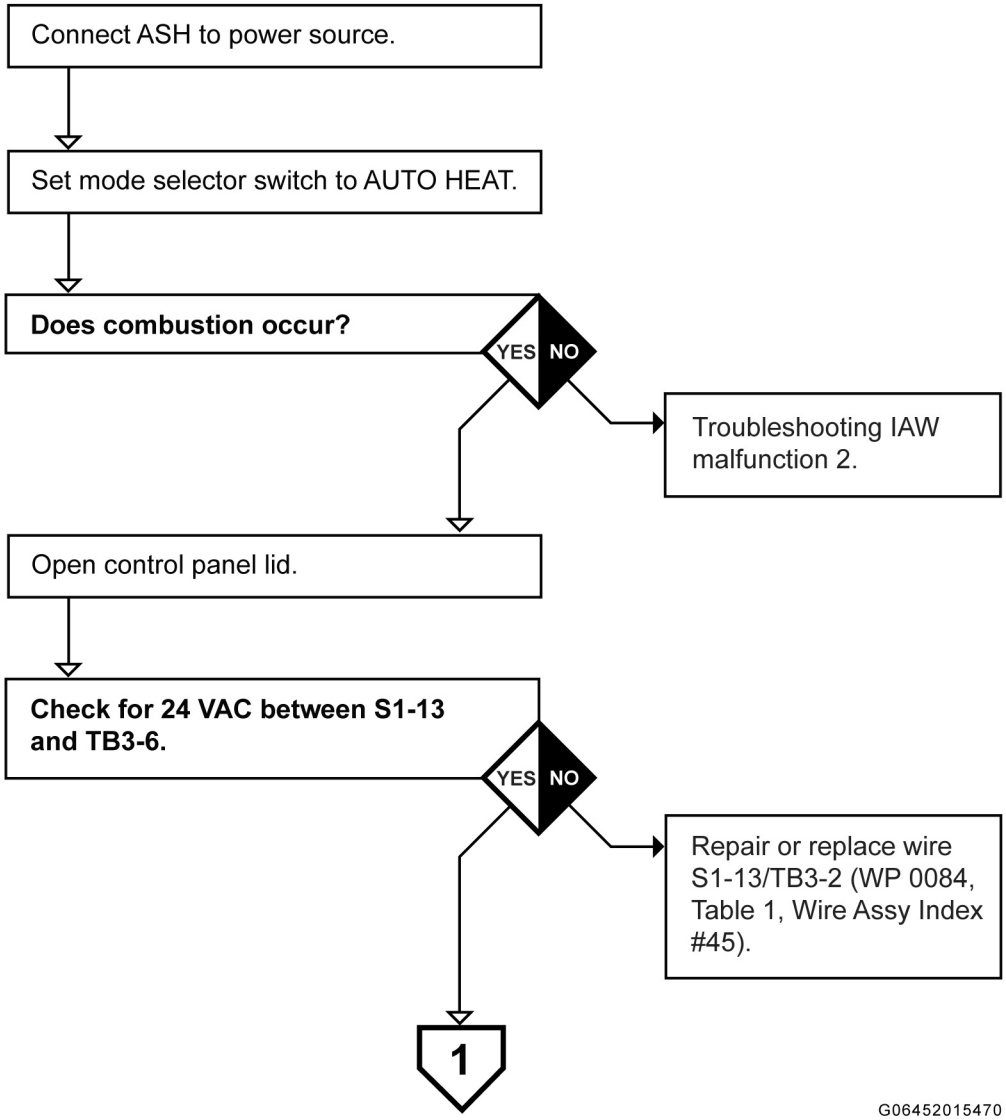


Figure 14. No Combustion in Heat Manual Mode (Sheet 1 of 2).

FIELD TROUBLESHOOTING PROCEDURES - (CONTINUED)

MALFUNCTION 13. No Combustion in HEAT MANUAL MODE- continued.

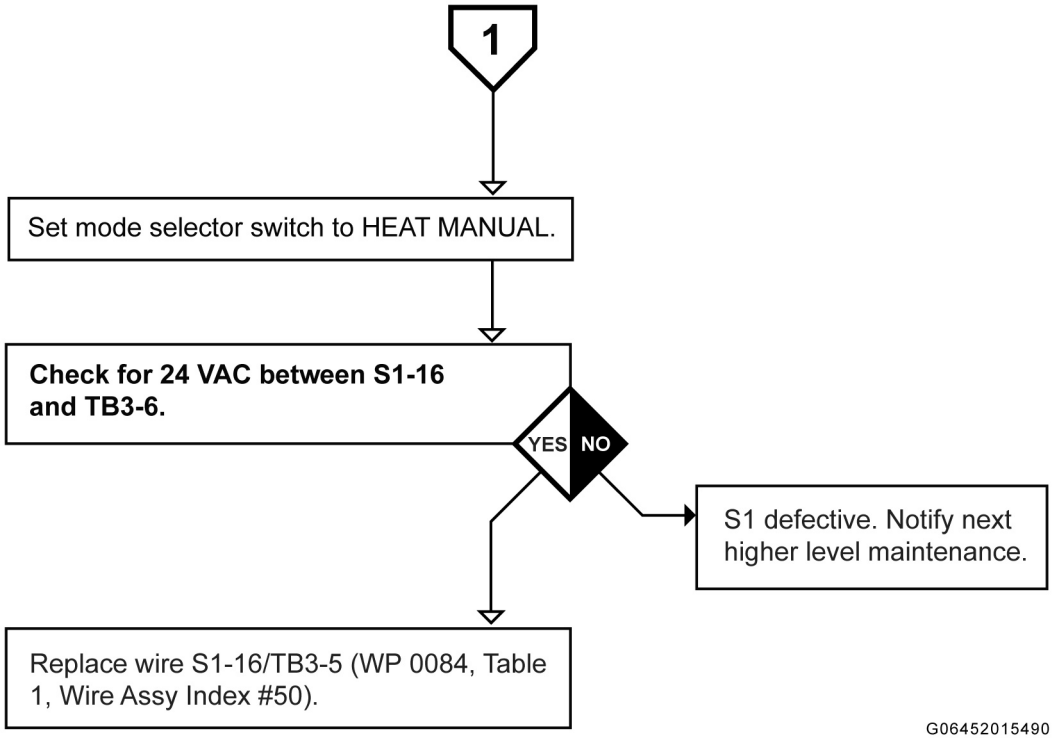

1
Set mode selector switch to HEAT MANUAL.
Check for 24 VAC between S1-16 and TB3-6.
YES
NO
S1 defective. Notify next higher level maintenance.
Replace wire S1-16/TB3-5 (WP 0084, Table 1, Wire Assy Index #50).
G06452015490

Figure 14. No Combustion in Heat Manual Mode (Sheet 2 of 2).

END OF WORK PACKAGE

CHAPTER 4

MAINTENANCE INSTRUCTIONS

FOR

ARMY SPACE HEATER H-120, H-120-1

OPERATOR INSTRUCTIONS

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION

GENERAL

Preventive Maintenance Checks and Services (PMCS) are essential to the efficient operation of the ASH, and to prevent possible damage that might occur through neglect or failure to observe symptoms of a failure in a timely manner. Operators perform PMCS using the PMCS work package for Operators (WP 0013), and Field Maintenance performs PMCS using the PMCS work package for Field Maintenance (WP 0014). Pay attention to warning and caution statements. A warning means someone could be hurt. A caution means equipment could be damaged.

PMCS means systematic caring, inspecting, and servicing of equipment to keep it in good condition and to prevent breakdowns. Always perform the PMCS in the same order, so it gets to be a habit. Once you have had some practice, you will quickly spot anything wrong. Perform the PMCS as follows:

1. BEFORE – just before you operate the ASH. Pay attention to warnings, cautions, and notes.
2. DURING – while you operate the ASH. During operation means to monitor the ASH and its related components while it is actually being operated. Pay attention to warnings, cautions, and notes.
3. AFTER – right after operating the ASH. Pay attention to warnings, cautions, and notes.
4. WEEKLY – once each week, preferably on the same day each week.
5. MONTHLY – once each month, preferably on the same day each month.
6. QUARTERLY – once every three months, preferably at the same part of the month.
7. SEMIANNUALLY – twice a year, preferably at six month intervals.
8. 250 Hours – once every 250 hours of use for the ASH.
9. 500 Hours – once every 500 hours of use for the ASH.
10. 1000 Hours – once every 1000 hours of use for the ASH.

If you find something wrong when performing PMCS, fix it using troubleshooting and/or maintenance procedures. If the fault cannot be corrected, use DA Form 2404 (Equipment Inspection and Maintenance Worksheet) to record the fault and immediately report it to your supervisor. When completing DA Form 2404, be sure to reference the item number of the faulty item from PMCS table. Use DA Form 2404 to record any faults that you discover before, during, or after operation, unless you can fix them. For further information on how to use this form, see DA PAM 750-8. You DO NOT need to record faults that you fix.

If tools that are required to perform PMCS are not listed in procedures, notify your supervisor.

PMCS PROCEDURES

The PMCS tables (WP 0013, Table 1, Operator, or WP 0014, Table 1, Field Maintenance) list the inspections and care required to keep the ASH in good operating condition. The PMCS table includes the following columns:

1. The ITEM NO. column indicates the number assigned to each PMCS procedure. The procedures are numbered in logical sequence of performance.
2. The INTERVAL column indicates when to perform a certain check or service.
3. The PROCEDURE column states how to do the required checks and services. Carefully follow these instructions. If you do not have tools, or if the procedure tells you to, notify your supervisor.
4. The EQUIPMENT NOT READY/AVAILABLE IF column indicates when the ASH is non-mission capable and why the equipment cannot be used.

The following are checks that are common to all equipment:

1. Keep it clean. Dirt, grease, oil, and debris may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (WP 0116, Item 4) on all metal surfaces. Use soap and water when you clean rubber or plastic material.
2. Rust and corrosion. Check the ASH for rust and corrosion. If any bare metal or corrosion exists, clean and apply a thin coat of lubricating oil (WP 0116, Item 8). Report it to your supervisor.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION - (CONTINUED)

3. Bolts, nuts, and screws. Check for obvious looseness and missing, bent, or broken condition. You can't try them all with a tool, but look for chipped paint, bare metal, or rust around bolt heads. If you find a bolt, nut, or screw you think is loose, tighten it or report it to your supervisor.
4. Welds. Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to your supervisor.
5. Electric wires and connectors. Look for cracked, frayed, or bare wires, and for loose or broken connectors. Report any damaged wires to your supervisor.
6. Hoses and fluid lines. Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots indicate leaks, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to your supervisor. When you check for operating condition, look at the component to see if it's serviceable.
7. Hinges. Check hinges for security and smooth operation. If you find a problem, report it to your supervisor.
8. Data Plates. Check data plates, caution, and warning plates for security and legibility. If you find a problem, report it to your supervisor.

CLEANING

Clean grease, rust, or fuel buildup or rusty places. Use dry cleaning solvent (WP 0116, Item 4) then apply a thin coat of lubricating oil (WP 0116, Item 8) to affected area, and use wiping rags (WP 0116, Item 11).

LEAKAGE DEFINITIONS

It is necessary for you to know how fluid leakage affects the status of the ASH. Following are types/classes of leakage you need to know to determine the status of the ASH. Learn these leakage definitions and remember that when in doubt notify your supervisor.

Equipment operation is allowed with minor leakage (Class I or II). Consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.

When operating with Class I or II leaks, continue to check fluid levels as required in the PMCS. Class III leaks should be reported immediately to your supervisor.

1. CLASS I - Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
2. CLASS II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.
3. CLASS III - Leakage of fluid great enough to form drops that fall from item being checked/inspected.

END OF WORK PACKAGE

OPERATOR INSTRUCTIONS

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

INITIAL SETUP:

Test Equipment
None

Tools and Special Tools
None required

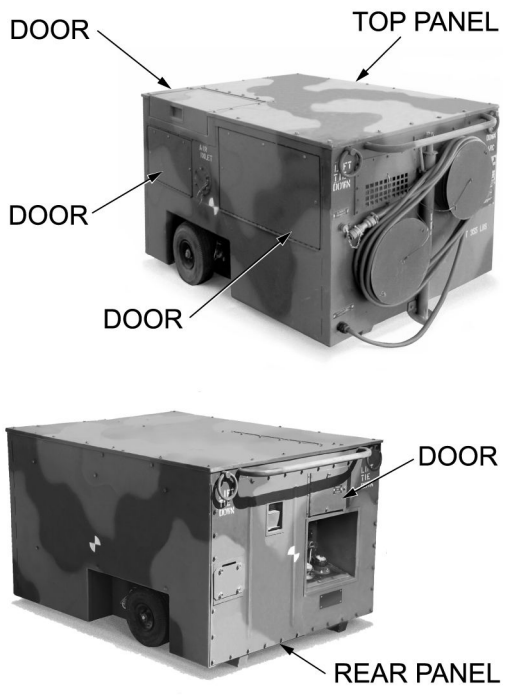
Materials/Parts
Tape, Pressure Sensitive, Adhesive (WP 0116, Item 16)

Personnel Required
General Purpose User, GPU - (1)

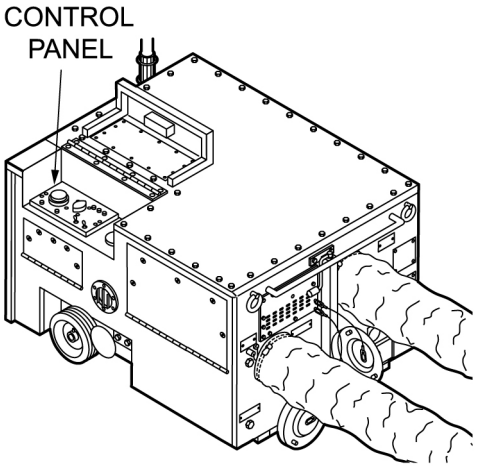
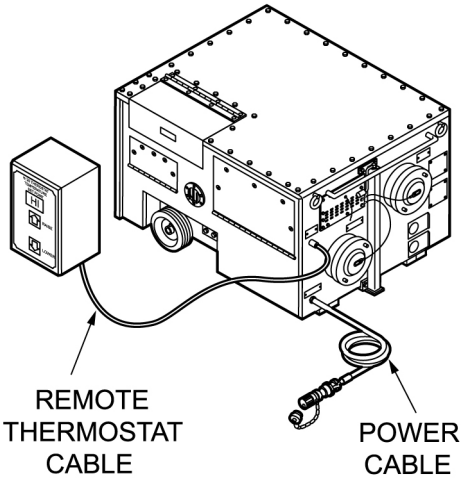
References
FM 10-67-1

Equipment Condition
None

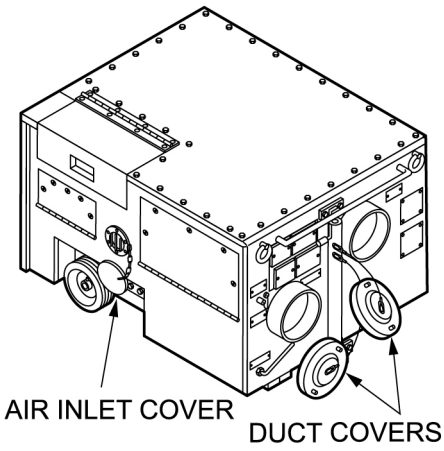
Table 1. Preventive Maintenance Checks And Services (PMCS)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Before	Access Doors and Top and Rear Panels	Inspect for loose or missing hardware, broken hinges, latches, attaching cables, dents, or holes.  Figure 1. Access Doors and Panels.	Missing doors, panels, or holes.
2	Before	Control Panel	1. Inspect for loose or missing hardware.	Loose or missing hardware.

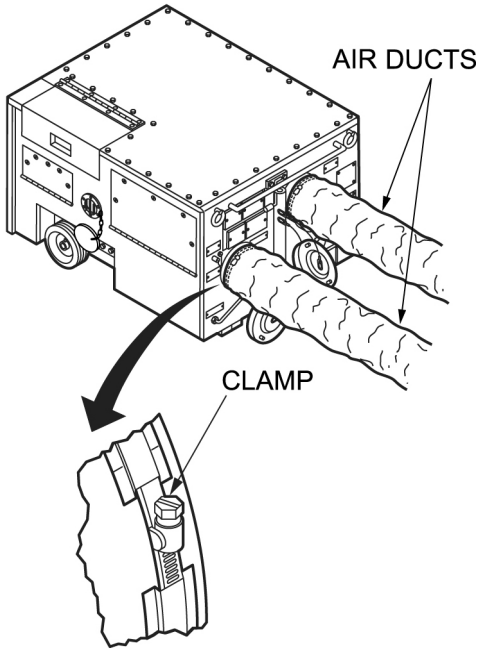
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect for broken or missing knobs, gauges, or switches.  Figure 2. Control Panel.	Broken or missing knobs, gauges, or switches.
3	Before	Power Cable and Remote Thermostat Cable	1. Inspect for frayed or cracked insulation and cracked, bent, or broken connectors. 2. Inspect cable connector for cracks, wear, or foreign objects.  Figure 3. Power Cable and Remote Thermostat Cable.	Exposed wires or damaged connectors. Damaged or worn cable connector.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
4	Before	Air Inlet Cover, Supply and Return Air Duct Covers	1. Inspect for missing covers. 2. Inspect for cracks, holes, or bent covers. 3. Inspect for security of chain. 4. Ensure covers have been removed from all three locations.  Figure 4. Air Inlet Cover, Supply and Return Air Duct Covers.	Missing covers. Damaged covers. Missing or damaged chain.
5	Before	Supply and Return Air Ducts	1. Inspect for holes or tears in fabric. 2. Inspect clamps for wear and sharp edges. 3. Inspect for missing, broken or loose clamps.	Holes or tears in fabric. Damaged clamps. Missing, broken, or loose clamps.

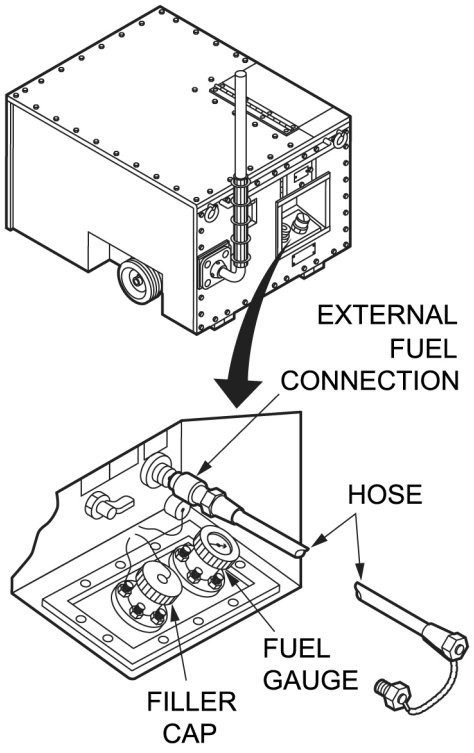
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			4. Apply pressure sensitive tape (WP 0116, Item 16) to minor holes or tears in fabric.  Figure 5. Supply and Return Air Ducts.	
6	Before	External Fuel Connection and Hose	**WARNING** For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations. Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.	

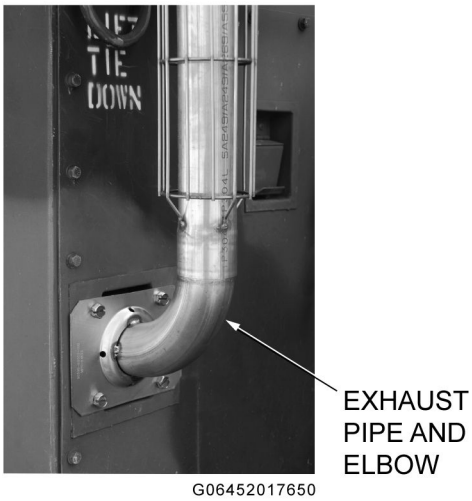
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed. Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs. 1. Inspect for missing dust cap (Figure 6). 2. Inspect fitting for damage, corrosion or leaks. 3. Inspect hose for wear or leaks.	Missing dust cap. Damage or leaks. Damage or leaks.
7	Before	Fuel Gauge and Filler Neck	1. Inspect for broken glass, bent or broken pointer, and corrosion. 2. Inspect fuel gauge and filler neck for leaks.	Broken glass, pointer, or any corrosion. Any leaks.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Remove filler cap and inspect screen for holes or foreign objects.  Figure 6. Fuel Gauge and Filler Neck.	Damaged screen.
8	Before	Exhaust Pipe and Elbow	1. Inspect for cracks, holes, corrosion, or improper fit. 2. Inspect for missing or damaged bolts.	Improper fit, cracks or holes. Damaged or missing bolts.

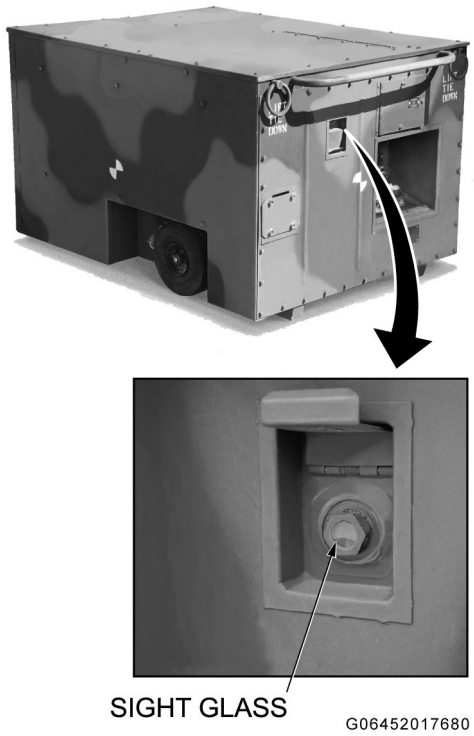
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Inspect for loose, missing, or damaged guard.  G06452017650 Figure 7. Exhaust Pipe and Elbow.	Loose, missing, or damaged guard.
9	Before	Jack Assembly	1. Check for missing or damaged hardware. 2. Check jack operation for ease of movement and ability to lift front of unit. G06452017660 Figure 8. Jack Assembly.	Missing or damaged hardware. Inoperative jack assembly.

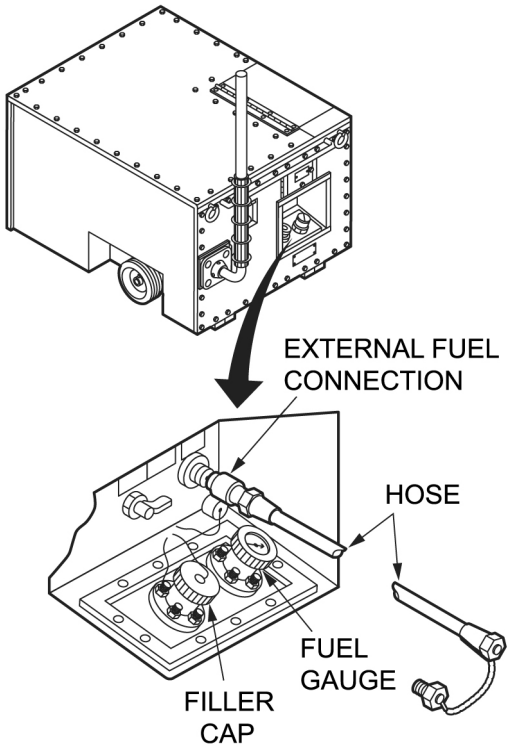
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
10	Before	Wheel Assembly	1. Inspect for wear, cuts, or damage. 2. Inspect for movement of wheel on axle and axle movement on pivot. 3. Inspect for missing or damaged bolts or lock pins. G06452017670 Figure 9. Wheel Assembly.	Damaged tire or wheel assembly. Damaged wheel assembly. Missing or damaged bolts or lock pins.

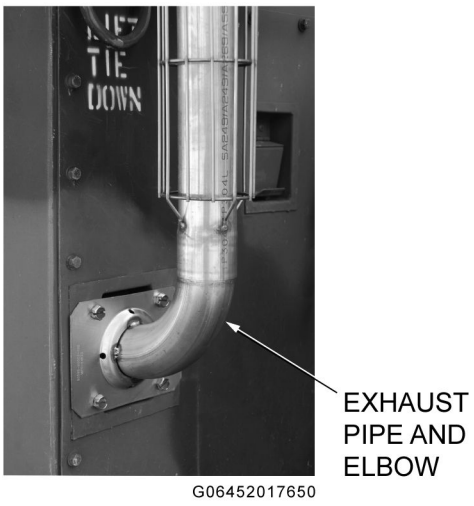
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
11	Before	Sight Glass	Inspect for dirty, cracked, rusty or missing sight glass.  Figure 10. Sight Glass.	Cracked or missing sight glass.
12	During	External Fuel Connection and Hose	**WARNING** For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations. Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.	

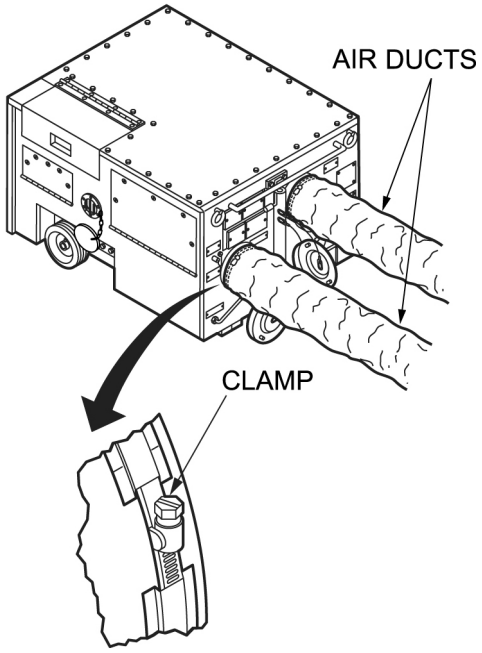
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed. Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs. Inspect for leaks.  Figure 11. External Fuel Connection and Hose.	Any leaks.
13	During	Exhaust Pipe and Elbow	1. Inspect for cracks or holes and loose or missing guard.	Cracks or holes, or missing guard.

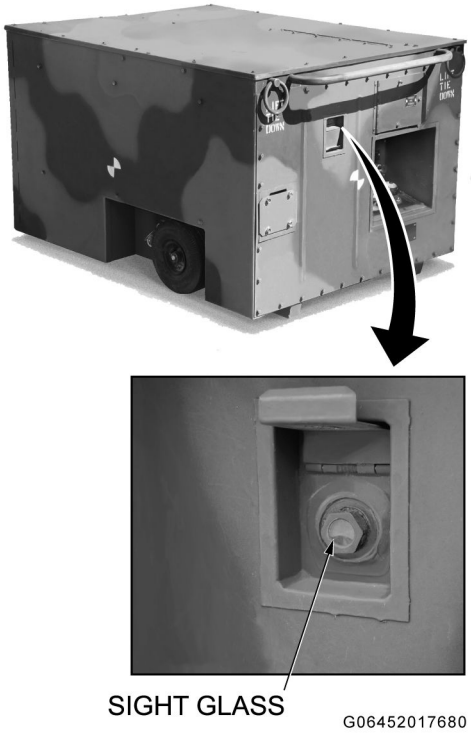
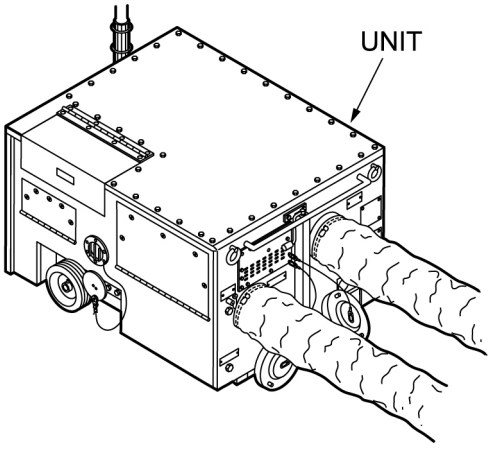
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect for loose or missing captive bolts.  Figure 12. Exhaust Pipe and Elbow.	Loose or missing captive bolts.
14	During	Supply and Return Air Ducts	1. Inspect for holes or tears in fabric. 2. Inspect clamps for wear and sharp edges. 3. Inspect for missing, broken or loose clamps. 4. Apply pressure sensitive tape (WP 0116, Item 16) to minor holes or tears in fabric.	Holes or tears in fabric. Damaged clamps. Missing, broken, or loose clamps.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 13. Supply and Return Air Ducts.	
15	During	Sight Glass	1. Check for accumulation of dirt or soot.	Unable to see through glass.

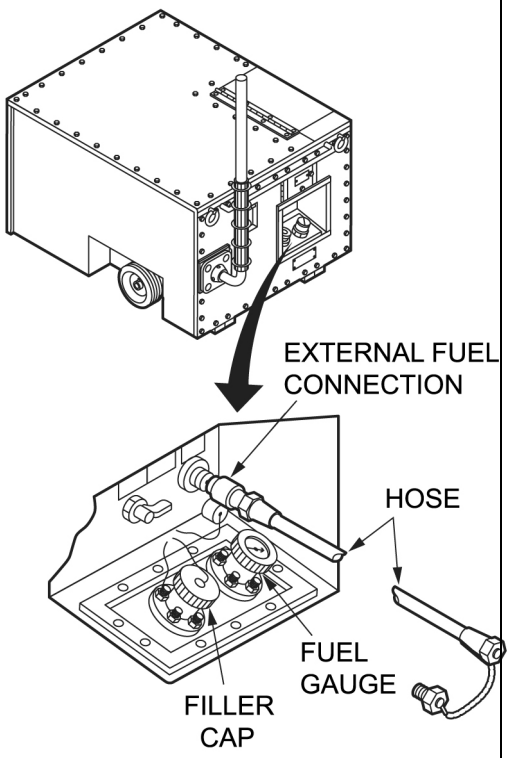
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Check for missing glass or cracks in glass.  Figure 14. Sight Glass.	Cracked or missing glass.
16	During	ASH Unit	Check the ASH for any unusual noises or vibrations.  Figure 15. ASH Unit.	Any unusual noise or vibration.

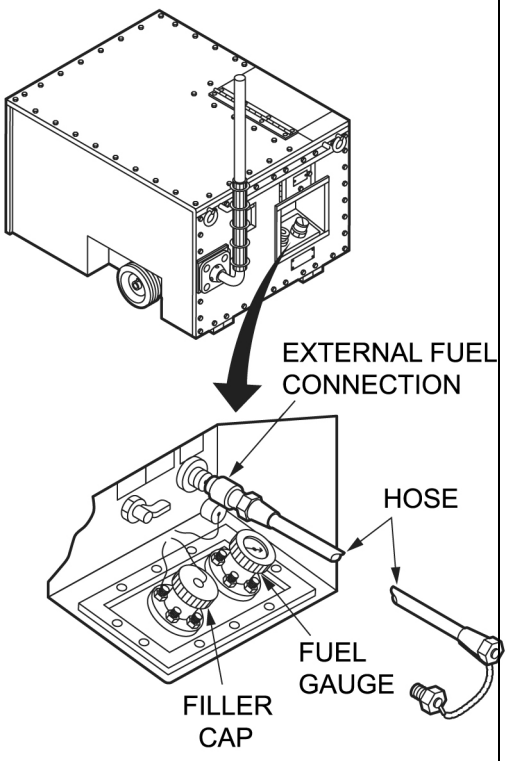
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
17	After	External Fuel Connection and Hose	**WARNING** For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations. Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available. Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed. Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs. 1. Inspect for missing dust cap (Figure 16). 2. Inspect fitting for damage, corrosion or leaks.	Missing dust cap. Damage or leaks.

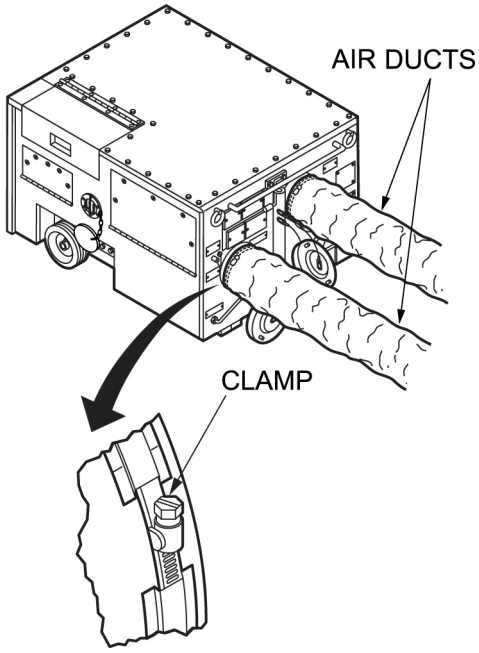
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Inspect hose for wear or leaks.  Figure 16. External Fuel Connection and Hose.	Damage or leaks.
18	After	Fuel Gauge and Filler Neck	1. Inspect for broken glass, bent or broken pointer, and corrosion. 2. Inspect fuel gauge and filler neck for leaks.	Broken glass, pointer, or any corrosion. Any leaks.

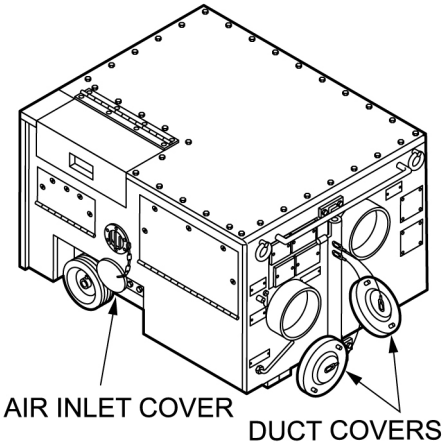
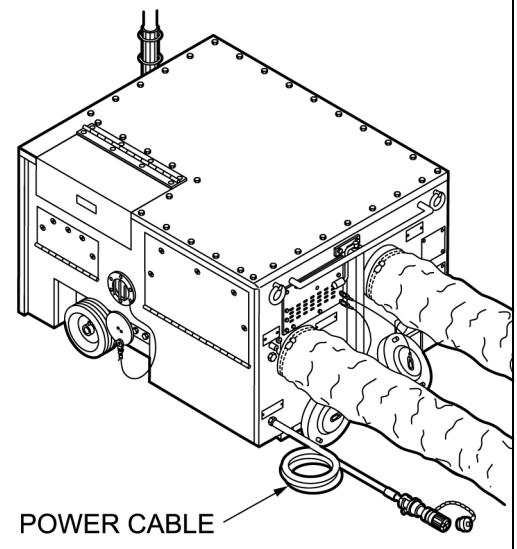
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Remove filler cap and inspect screen for holes or foreign objects.  Figure 17. Fuel Gauge and Filler Neck.	Damaged screen.
19	After	Supply and Return Air Ducts	1. Inspect for holes or tears in fabric. 2. Inspect clamps for wear and sharp edges. 3. Inspect for missing, broken or loose clamps. 4. Apply pressure sensitive tape (WP 0116, Item 16) to minor holes or tears in fabric.	Holes or tears in fabric. Damaged clamps. Missing, broken, or loose clamps.

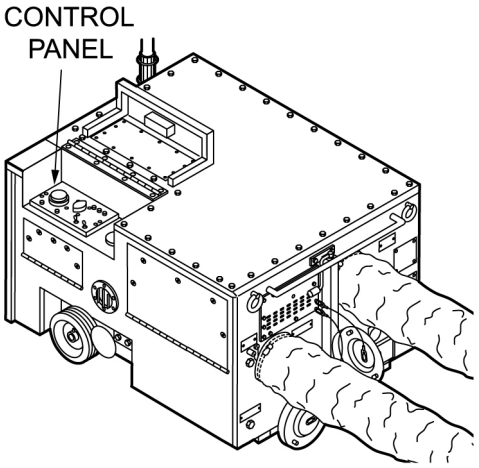
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 18. Supply and Return Air Ducts.	
20	After	Air Inlet Cover, Supply and Return Air Duct Covers	1. Inspect for missing or damaged covers. 2. Inspect for proper fit over ports.	Missing or damaged covers. Improper fit over ports.

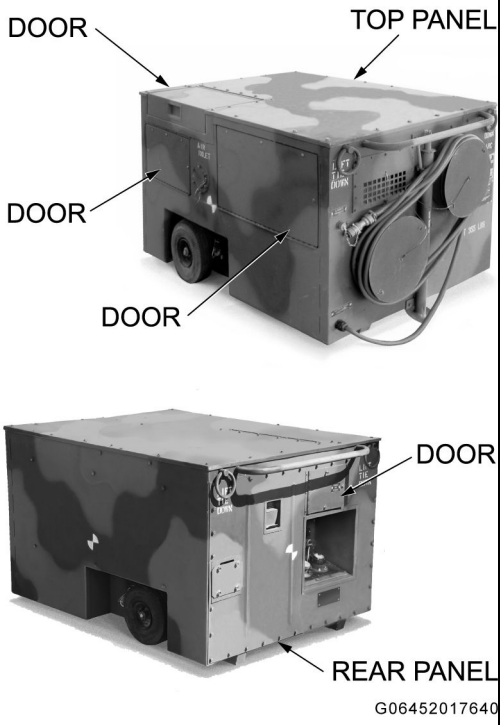
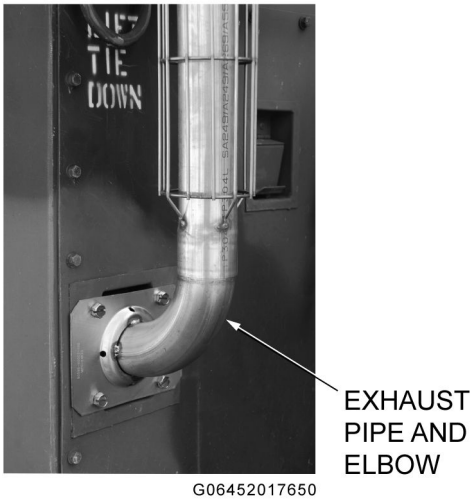
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Inspect chain for security.  Figure 19. Air Inlet Cover, Supply and Return Air Duct Covers.	Missing or damaged chain.
21	After	Power Cable	1. Inspect for frayed or cracked insulation and cracked, bent, broken, or burnt connectors. 2. Inspect for cracks, wear, or foreign objects on cable connector.  Figure 20. Power Cable.	Damaged insulation or connectors. Damaged cable connector.
22	After	Control Panel	1. Inspect for loose or missing hardware.	Loose or missing hardware.

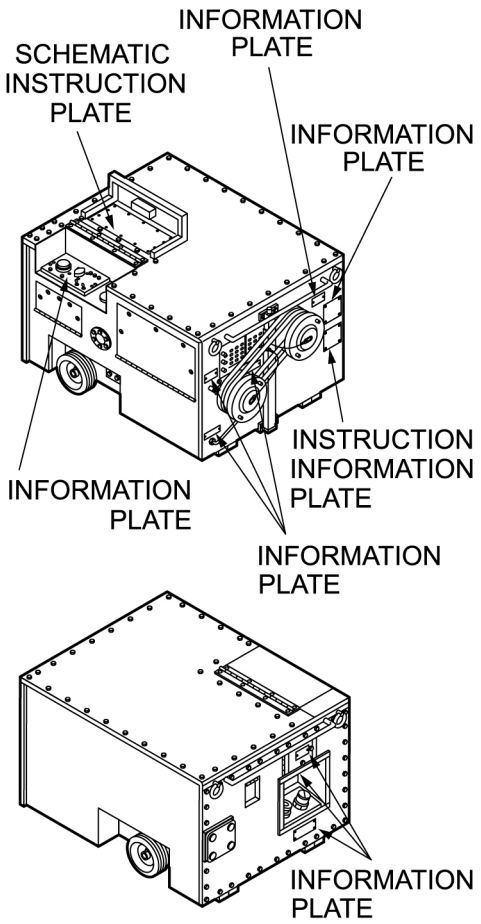
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect for broken or missing knobs, gauges, or switches.  Figure 21. Control Panel.	Broken or missing knobs, gauges, or switches.
23	After	Access Doors and Top and Rear Panels	1. Inspect for loose or missing doors, panels, or hardware. 2. Inspect for loose, broken, bent or missing hinges, latches, or attaching cables.	Loose or missing doors, panels, or hardware. Loose, broken, bent or missing

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 22. Access Doors and Top and Rear Panels.	hinges, latches, or attaching cables.
24	After	Exhaust Pipe and Elbow	1. Inspect for cracks or holes, loose or missing heat shield. 2. Inspect for loose or missing captive bolts.  Figure 23. Exhaust Pipe and Elbow.	Cracks or holes, loose or missing captive bolts. Loose or missing captive bolts.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
25	Monthly	Information, Instruction, and Schematic Instruction Plates	1. Inspect for loose, damaged, or missing plates. 2. Inspect plates for legibility.  Figure 24. Information, Instruction, and Schematic Instruction Plates.	Loose, damaged, or missing plates. Illegible plates.

MANDATORY REPLACEMENT PARTS

See WP 0118 in this TM for a list of the ASH mandatory replacement parts.

END OF WORK PACKAGE

FIELD MAINTENANCE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

INITIAL SETUP:

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Dry Cleaning Solvent (WP 0116, Item 4)
Rag, Wiping (WP 0116, Item 11)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 4-25.11
FM 10-67-1
WP 0024
WP 0056
WP 0058
WP 0062
WP 0063
WP 0065
WP 0070
WP 0071
WP 0072

Table 1. Preventive Maintenance Checks And Services (PMCS)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1	Semiannually	Frame Assembly	1. Visually inspect all four sides, top and bottom of ASH for cracks, loose/missing hardware and corrosion.	Cracks in frame, loose/missing hardware, or damage.
			2. Open all access doors and inspect inside for loose or missing hardware, cracks or other damage.	Loose or missing hardware, cracks or other damage.
			3. Inspect inside bottom of unit for accumulation of water or fuel.	Water or fuel in bottom of ASH.

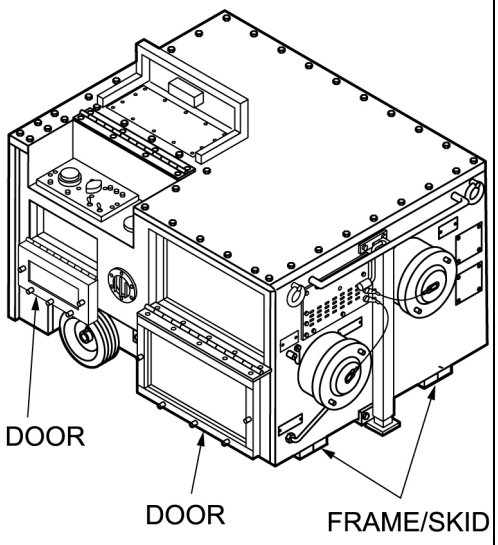
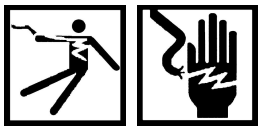
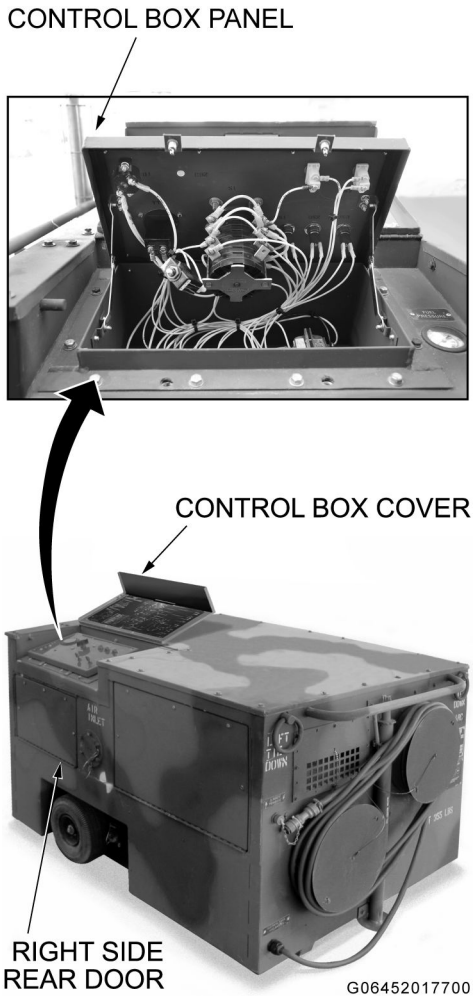


Figure 1. Frame Assembly.

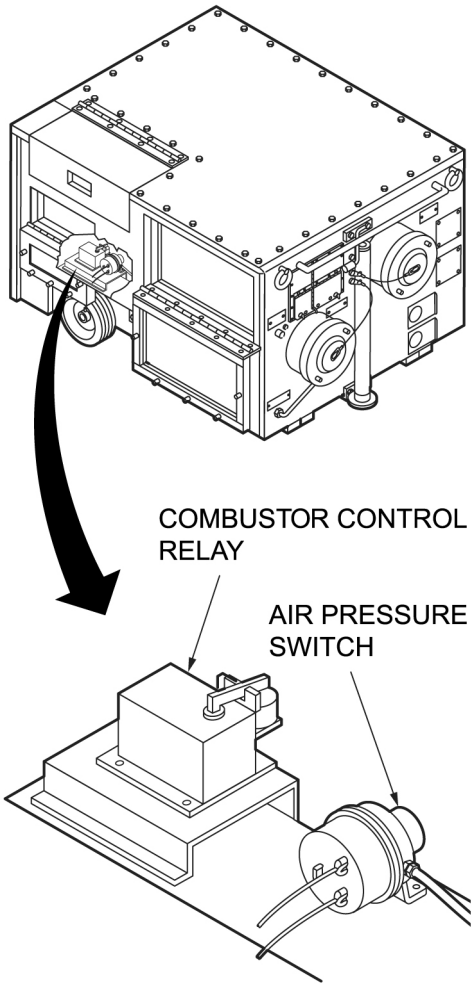
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
2	Semiannually	Control Box	**WARNING**  For artificial respiration, refer to 4-25.11, First Aid. Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you. To ensure your safety and that of other maintenance personnel, always observe the following precautions: Do not perform any maintenance on electrical equipment unless all power is removed. Be certain that there is someone assisting you who can remove power immediately. 1. Open right side rear door. 2. Open control box cover. 3. Open control box panel. 4. Inspect components for damaged or missing hardware or corrosion.	Damaged wires, missing hardware, or corrosion.

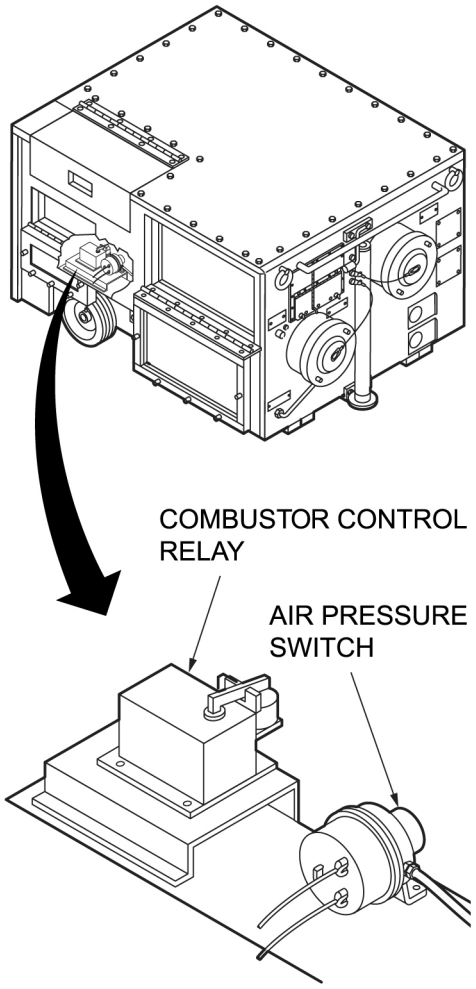
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			5. Inspect for loose connections, chafing, or exposed wires (WP 0024, WP 0056).  Figure 2. Control Box.	Loose connections or exposed wires.
3	Semiannually	Combustor Control Relay	1. Inspect for loose or missing hardware, loose, chafing, or broken connections. 2. Inspect for corrosion on terminals.	Loose, chafing, or broken connections. Corroded terminals.

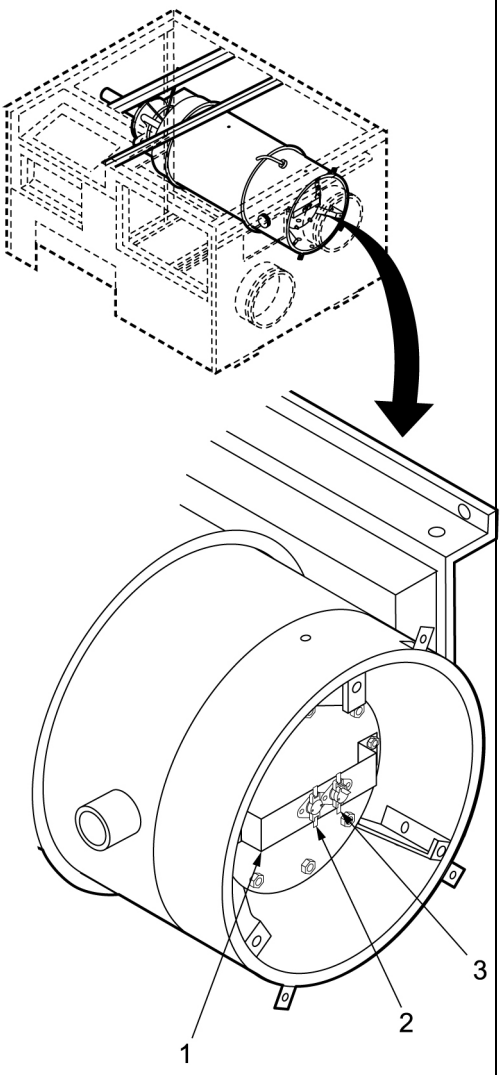
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Check reset arm for freedom of movement (WP 0058).  Figure 3. Combustor Control Relay.	No freedom of movement on reset arm.
4	Semiannually	Air Pressure Switch	1. Inspect for loose or missing hardware. 2. Inspect for loose connections, chafing or exposed wires.	Loose or missing hardware. Loose, chafing, or broken wires.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Inspect air line for security, kinks or cracks.  Figure 4. Air Pressure Switch.	Kinked or cracked air line.
5	Semiannually	Thermostat Assembly – Discharge Air Thermostat	1. In the Thermostat Assembly (Figure 5, Item 1), inspect Discharge Air Thermostat (Figure 5, Item 3) for secure mounting and corrosion. 2. Inspect for loose connections, chafing or exposed wires.	Loose mounting or corrosion. Loose connections, chafing or exposed wires.

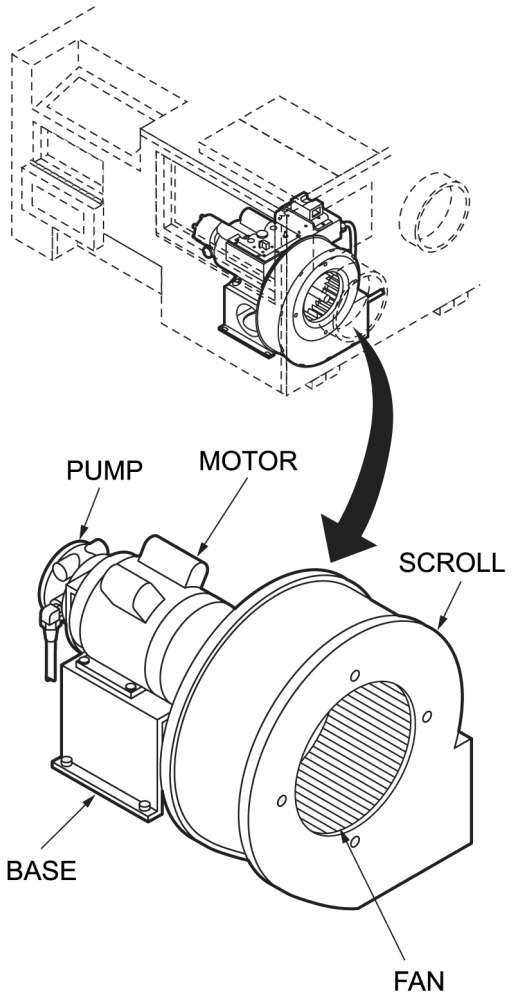
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
6	Semiannually	Thermostat Assembly: Temperature Limit Switch	1. Inspect Temperature Limit Switch (Figure 5, Item 2) for secure mounting and corrosion. 2. Inspect for loose connections, chafing or exposed wires.  Figure 5. Thermostat Assembly.	Loose mounting or corrosion. Loose connections, chafing or exposed wires.
7	Semiannually	Circulating Air Fan / Pump / Motor Assembly: Air Fan	1. Inspect fan for damaged/missing blades, loose or missing hardware.	Loose, missing or damaged blades or hardware.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect scroll for holes, dents, loose or missing hardware.	Loose or damaged scroll.
8	Semiannually	Circulating Air Fan / Pump / Motor Assembly: Pump	1. Inspect fuel pump for security and leaks (WP 0063).	Any leaks.
			2. Check the coupling spring pin and cotter pin for security (WP 0063).	Loose coupling spring pin or cotter pin.
9	Semiannually	Circulating Air Fan / Pump / Motor Assembly: Motor	1. Inspect motor for loose or damaged hardware.	Loose or damaged hardware.
			2. Inspect for loose connections, chafing or exposed wires (WP 0034).	Loose, frayed or exposed wires.
10	Semiannually	Circulating Air Fan / Pump / Motor	Inspect for loose or missing hardware.	Loose base.

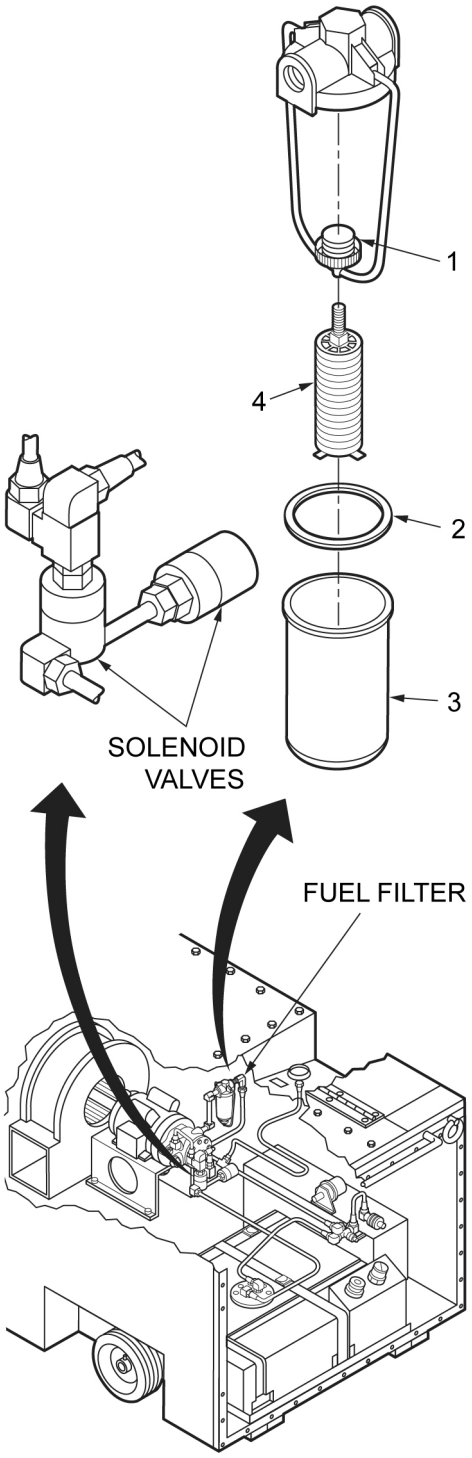
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
		Assembly: Base	 Figure 6. Circulating Air Fan/Pump/Motor Assembly: Air Fan, Pump, Motor, and Base.	
11	Semiannually	Circulating Air Fan / Pump / Motor Assembly: Solenoid Valves	Inspect for loose or missing hardware, loose or broken connections and leaks.	Any leaks.
12	Semiannually	Circulating Air Fan / Pump / Motor Assembly: Fuel Filter	1. Inspect for loose or missing hardware, leaks, corrosion or other damage. 2. Service filter element as follows: Unscrew captive nut (Figure 7, Item 1). 3. Remove bowl (Figure 7, Item 3), gasket (Figure 7, Item 2), and filter (Figure 7, Item 4). Discard gasket.	Any leaks.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			4. Clean filter with dry cleaning solvent (WP 0116, Item 4). 5. Install filter (Figure 7, Item 4), gasket (Figure 7, Item 2), and bowl (Figure 7, Item 3). 6. Position captive nut (Figure 7, Item 1) under bowl (Figure 7, Item 3) and tighten hand tight only.	

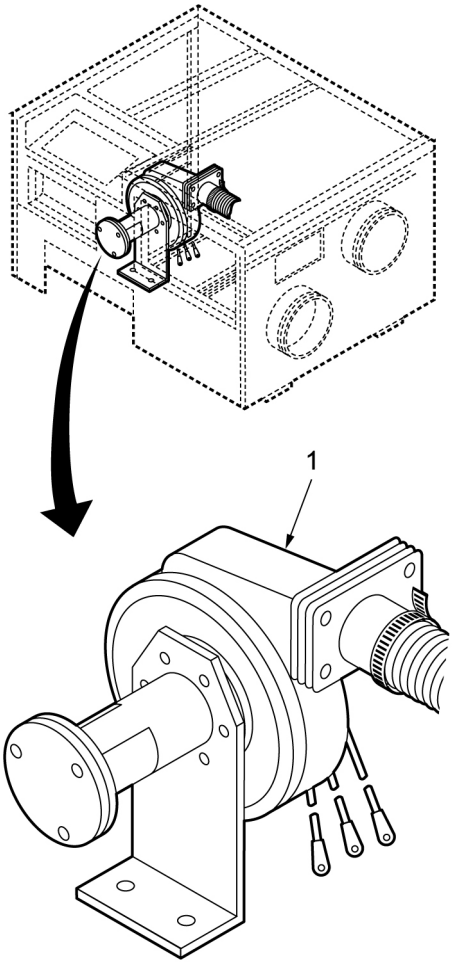
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 7. Circulating Air Fan/Pump/Motor Assembly: Solenoid Valves and Fuel Filter.	

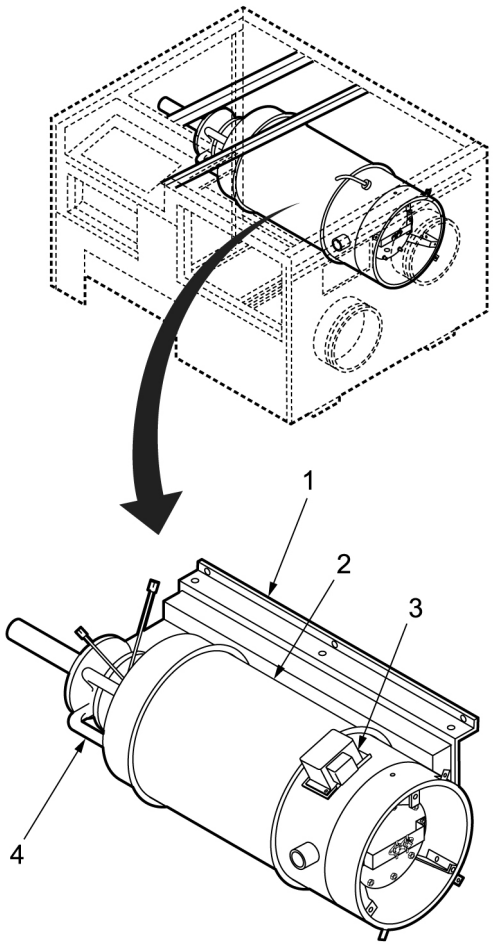
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
13	Semiannually	Combustion Air Fan Assembly	1. Inspect fan assembly (Figure 8, Item 1) for damaged/missing blades, loose or missing hardware or corrosion (WP 0066).	Damaged/missing blades, loose hardware, or corrosion.
			2. Inspect duct for security, holes, cracks or corrosion (WP 0065).	Holes or cracks.
			3. Inspect motor base for loose/missing hardware, cracks or corrosion (WP 0065).	Loose/missing hardware, cracks, or corrosion.
			4. Inspect for loose connections, chafing or exposed wires (WP 0065).	Loose connections,

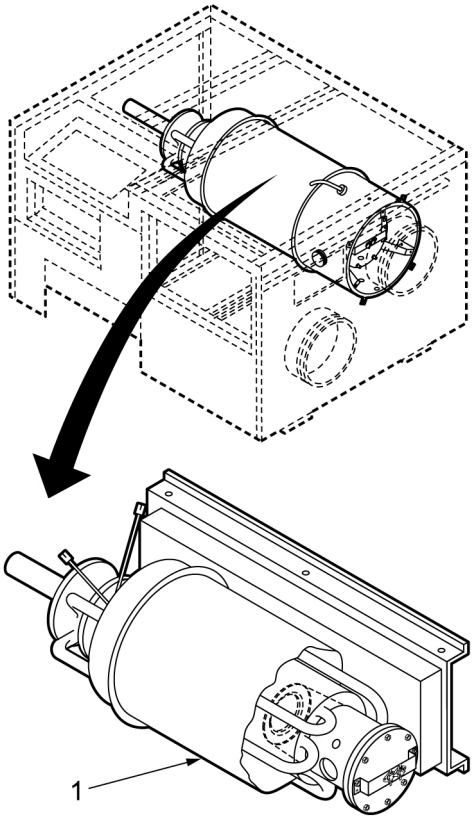
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 8. Combustion Air Fan Assembly.	chafing, or exposed wires.
14	1000 Hours	Heat Exchanger Assembly: Primary and Secondary Heat Exchangers	1. Inspect for loose or missing hardware.	Loose or missing hardware.
			2. Inspect for holes, cracks or other signs of burn through, or corrosion.	Holes, cracks, signs of burn through, or corrosion.
			3. Inspect exhaust pipe for security, holes, cracks, or other signs of exhaust leaks, and corrosion.	Holes, cracks, leaks, or corrosion.

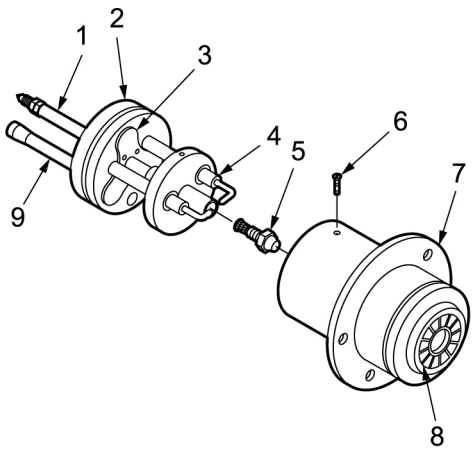
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			4. Remove sight glass. Clean lens with a clean soft rag. Apply anti-seize compound (WP 0116, Item 2) to sight glass and install on heat exchanger.	
15	1000 Hours	Heat Exchanger Assembly: Transformer	1. Inspect transformer (Figure 9, Item 3) for loose or missing hardware. Tighten loose hardware, replace missing hardware (WP 0070, WP 0071). 2. Inspect for loose connections, chafing or exposed wire (WP 0070, WP 0071).  Figure 9. Heat Exchangers and Transformer.	Loose or missing hardware. Loose connections, chafing, or exposed wire.

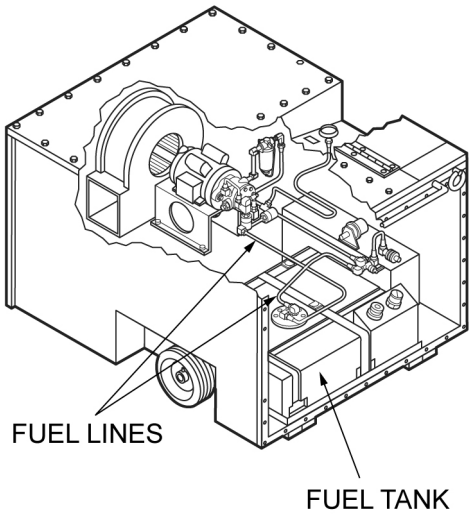
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
16	1000 Hours	Heat Exchanger Assembly: Burner Assembly	1. Inspect for loose or missing hardware on burner section (Figure 10, Item 1).	Missing hardware.
			2. Inspect for holes, cracks or other signs of burn through, or corrosion on burner section.	Holes, cracks, or signs of burn through.
			 Figure 10. Heat Exchanger Assembly: Burner Assembly.	
			3. Remove burner assembly from heat exchanger (WP 0072).	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			4. Remove three setscrews (Figure 11, Item 6) and pull burner (Figure 11, Item 2) from housing (Figure 11, Item 7).	
				
			Figure 11. Burner Assembly.	
			5. Nozzle:	
			a. Remove nozzle/filter (Figure 11, Item 5) from burner and discard. Install new nozzle/filter snugly on burner, do not overtighten.	Dirty filter.
			6. Electrodes (Figure 11, Item 4):	
			a. Inspect for cleanliness and secure mounting. Check for signs of pitting, burning or cracks.	Cracks found in electrodes.
			7. Fire Ring (Figure 11, Item 8):	
			a. Inspect for cleanliness and secure mounting. Check for signs of pitting, burning or cracks.	
			8. Fuel Supply Tube (Figure 11, Item 1):	
			a. Inspect for evidence of leaks and secure mounting.	Any leak from Fuel Supply Tube.
			9. Flame Sensor Tube (Figure 11, Item 9):	

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) - (CONTINUED)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			a. Inspect for secure mounting. Inspect for cracks or bends.	Cracked or bent Flame Sensor Tube.
			10. Petal Valve (Figure 11, Item 3):	
			a. Inspect for cracks, tears, or bends. Install burner (Figure 11, Item 2) into housing (Figure 11, Item 7) until it is flush with back of housing. Install three setscrews (Figure 11, Item 6).	Cracks, tears, or bends in Petal Valve.
17	Semiannually	Fuel Tank Assembly: Tank	Inspect for leaks, loose or missing hardware, corrosion, or other damage.	Any leaks.
18	Semiannually	Fuel Tank Assembly: Fuel Lines	1. Inspect for chafing, cracks, leaks, corrosion or other damage. 2. Remove damaged fuel lines and replace (WP 0062).  Figure 12. Fuel Tank Assembly and Fuel Lines.	Any leaks.

MANDATORY REPLACEMENT PARTS

See WP 0118 in this TM for a list of the ASH mandatory replacement parts.

END OF WORK PACKAGE

CHAPTER 5

MAINTENANCE INSTRUCTIONS

FOR

ARMY SPACE HEATER H-120, H-120-1

FIELD MAINTENANCE

SERVICE UPON RECEIPT

INITIAL SETUP:

Tools and Special Tools
Face Shield (Tool Set, SATS) (WP 0117, Item 5)
Gloves, Heat Protective (WP 0116, Item 5)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (2)

References
DA PAM 738-751
FM 10-67-1
SF 361

SITE REQUIREMENTS

Location

1. Locate ASH approximately 7 feet (2.14 m) from shelter, about midway between shelter supply and return air connections.
2. The heater duct openings must be facing the shelter connections.
3. The power source must be located within 25 feet (7.62 m) of the ASH.
4. The external fuel source must be located within 25 feet (7.62 m) of the ASH.

Terrain

WARNING

Use care when using the jack assembly or when raising or lowering the wheel assemblies. Fingers or hands may be pinched causing injury to personnel.

CAUTION

Do not set up the ASH on extremely unlevel (greater than 10 degrees from true horizontal position) terrain. Doing so may result in improper operation or damage to equipment.

1. The wheel assemblies should be in the stowed position. Raise the front of the ASH with the attached jack, and remove the wheel pin and move the wheels up toward the rear of the ASH. Lower the front end.
2. The terrain should be as level as possible. Level the ASH by adjusting the front of the ASH with the attached jack so it does not exceed 10-degree incline.
3. The area in front of the ASH must be clear of objects that would interfere with proper positioning of the air ducts.
4. The area around and above exhaust pipe (6 feet (1.83 m) from ground level) must be clear of obstacles.
5. The area of the right side of unit must allow access by the operator to operate the controls on the control panel and allow a clear path for air flow to the combustion fan air inlet.

SERVICE UPON RECEIPT - (CONTINUED)

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

6. The terrain for the external fuel source should be as level as possible. The external fuel source must be placed not lower than 12 inches (30.5 cm) below base of the ASH and not higher than 10 feet (3 m) above the ASH.

END OF TASK

SERVICE UPON RECEIPT OF MATERIEL

Unpacking

Equipment may be crated in wooden crate or wrapped in plastic wrap.

Wooden Crate

WARNING

The wooden packing crate weighs 100 pounds (45.4 kg). Two people are required to remove wooden cover.

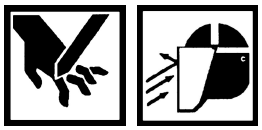
1. Remove two duct boxes (Figure 1, Item 1) from top of wooden crate cover (Figure 1, Item 2).
2. Remove eighteen lag bolts (Figure 1, Item 8) and remove cover (Figure 1, Item 2).

Plastic Wrap

1. Remove plastic wrap (Figure 1, Item 3) and two duct boxes (Figure 1, Item 1) from heater unit (Figure 1, Item 4).

SERVICE UPON RECEIPT - (CONTINUED)

WARNING



Steel bands under tension can snap free and cause injury to personnel. Leather gloves and face shield are required.

2. Cut steel bands (Figure 1, Item 5) from heater unit (Figure 1, Item 4).

WARNING

The ASH weighs 355 pounds (161 kg). Mechanical lift is required. For localized movement and positioning, lower wheels and manually move ASH to desired location by utilizing handrails.

3. Remove heater unit (Figure 1, Item 4) from skid (Figure 1, Item 6).
4. Carefully open two duct boxes (Figure 1, Item 1) and remove ducts (Figure 1, Item 7). Container and skid may be saved for reuse.

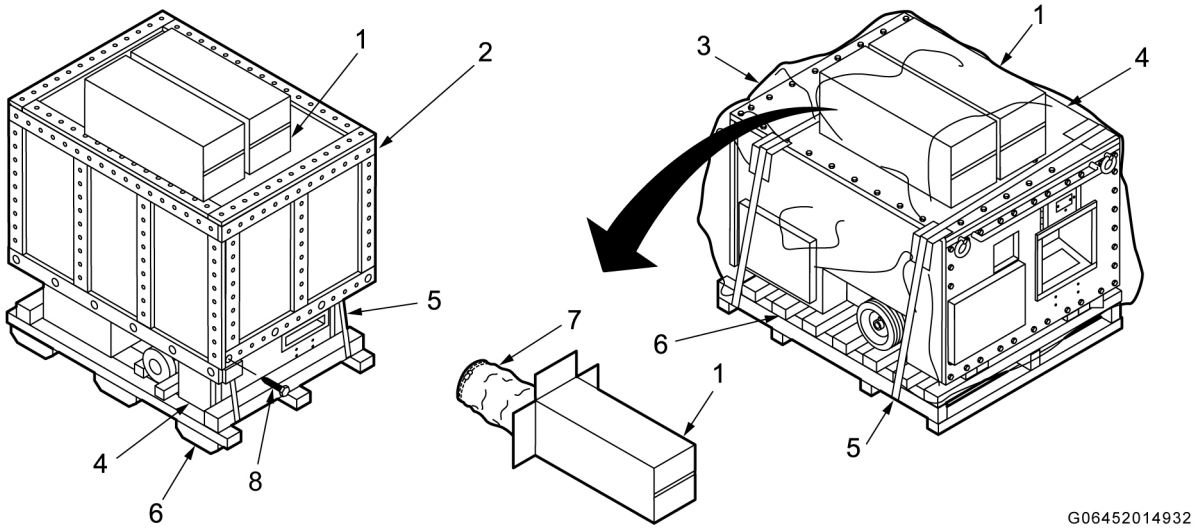


Figure 1. ASH Packaging.

Checking Unpacked Equipment

1. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report damage on SF 361, Transportation Discrepancy Report.
2. Check the equipment against packing slip to see if the shipment is complete. Report all discrepancies in accordance with applicable service instructions (e.g., DA PAM 738-751).

END OF TASK

SERVICE UPON RECEIPT - (CONTINUED)

INSTALLATION

Assembly of Equipment

1. Open right side front door (Figure 2, Item 9) and right side rear door (Figure 2, Item 7).
2. Loosen two thumb screws (Figure 2, Item 2) and remove the exhaust elbow (Figure 2, Item 5) and external fuel hose (Figure 2, Item 10). Close the right side front door (Figure 2, Item 9).
3. Remove the remote thermostat assembly (Figure 2, Item 3), Close the right side rear door (Figure 2, Item 7).
4. Remove the dust cap (Figure 2, Item 6) from remote thermostat assembly (Figure 2, Item 3).
5. Remove the remote thermostat connection cap (Figure 2, Item 4) and connect remote thermostat assembly (Figure 2, Item 3) to connection (Figure 2, Item 11).
6. Remove combustion air inlet cover (Figure 2, Item 8) from combustion air inlet (Figure 2, Item 1).
7. Open the exhaust pipe storage door (Figure 2, Item 12) and remove the exhaust pipe (Figure 2, Item 16). Close the exhaust pipe storage door (Figure 2, Item 12).
8. Remove four screws (Figure 2, Item 15) and exhaust cover plate (Figure 2, Item 14).
9. Position the exhaust elbow (Figure 2, Item 17) over the exhaust port (Figure 2, Item 13).
10. Install exhaust cover plate (Figure 2, Item 14) and four screws (Figure 2, Item 15).
11. Install the exhaust pipe (Figure 2, Item 16) on the exhaust elbow (Figure 2, Item 17).

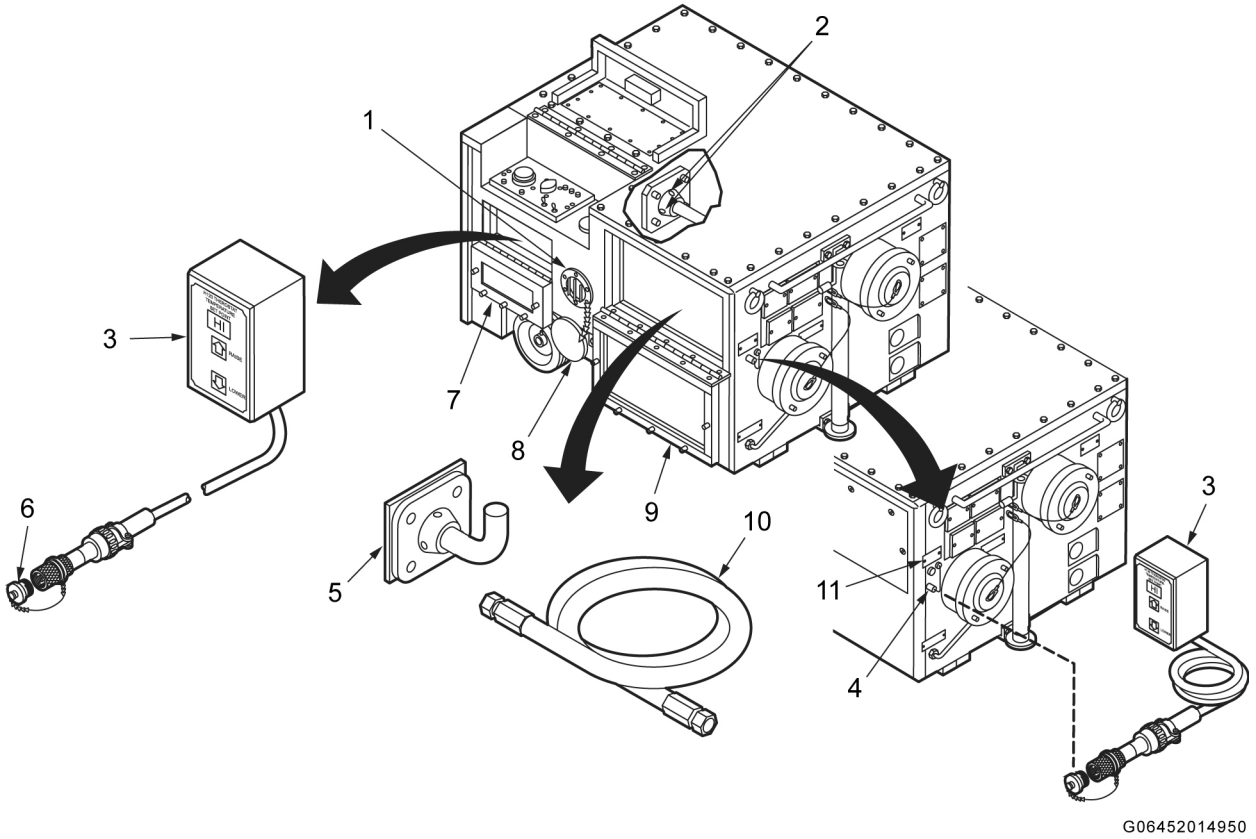


Figure 2. Assembly of Equipment (Sheet 1 of 2).

SERVICE UPON RECEIPT - (CONTINUED)

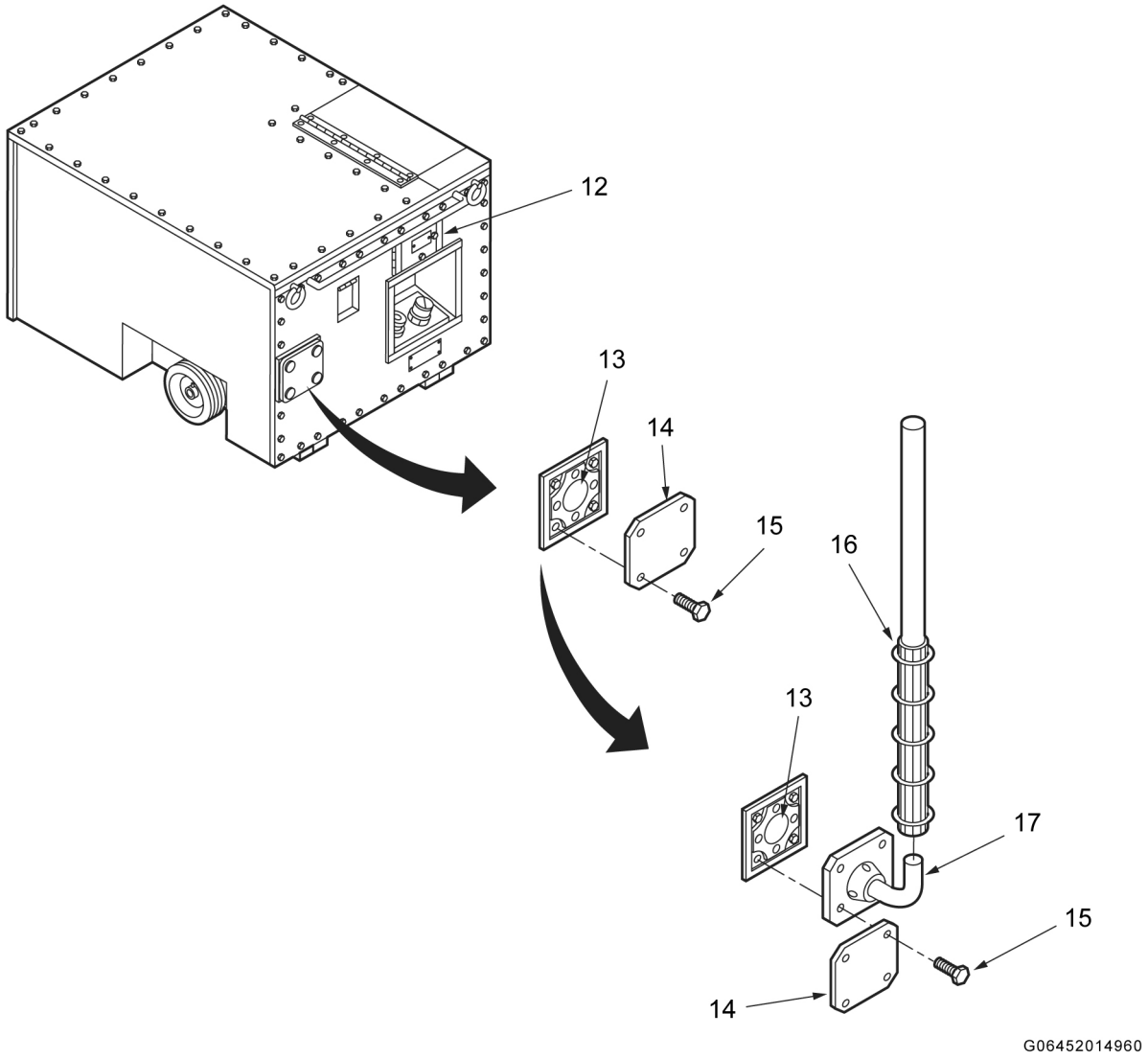


Figure 2. Assembly of Equipment (Sheet 2 of 2).

Installation of Equipment

1. Unwrap power cable (Figure 3, Item 9) and lay aside.
2. Loosen four screws (Figure 3, Item 1) and remove supply air duct cover (Figure 3, Item 3) and return air duct cover (Figure 3, Item 2).

NOTE

The ASH may be operated either in a closed loop or 100% fresh air configuration. Check with the operator for intended use prior to connecting the return duct to the ASH.

3. For recirculating air setup, proceed as follows:

SERVICE UPON RECEIPT - (CONTINUED)

CAUTION

The air ducts may have smooth bends when connected properly. Be careful to avoid sharp bends, which will restrict air flow. Restrictions will cause equipment damage or improper operation.

NOTE

Arrows on the ducts indicate the direction of air flow.

a. Connect the supply air duct (Figure 3, Item 4) to ASH (Figure 3, Item 5) and to the shelter connection. Tighten two clamps (Figure 3, Item 7) securely.
b. Connect the return air duct (Figure 3, Item 6) to ASH (Figure 3, Item 5) and to the shelter connection. Tighten two clamps (Figure 3, Item 7).
c. Fresh air can be introduced into the ASH by adjusting the damper assembly (Figure 3, Item 8). This can be accomplished at initial setup or by the operator at a later time.

4. For 100% fresh air setup, proceed as follows:

CAUTION

The air ducts may have smooth bends when connected properly. Be careful to avoid sharp bends, which will restrict air flow. Restrictions will cause equipment damage or improper operation.

a. Connect the supply air duct (Figure 3, Item 4) to ASH (Figure 3, Item 5) and to the shelter connection. Tighten two clamps (Figure 3, Item 7) securely.
b. Do not connect the return air duct (Figure 3, Item 6) to ASH (Figure 3, Item 5).

SERVICE UPON RECEIPT - (CONTINUED)

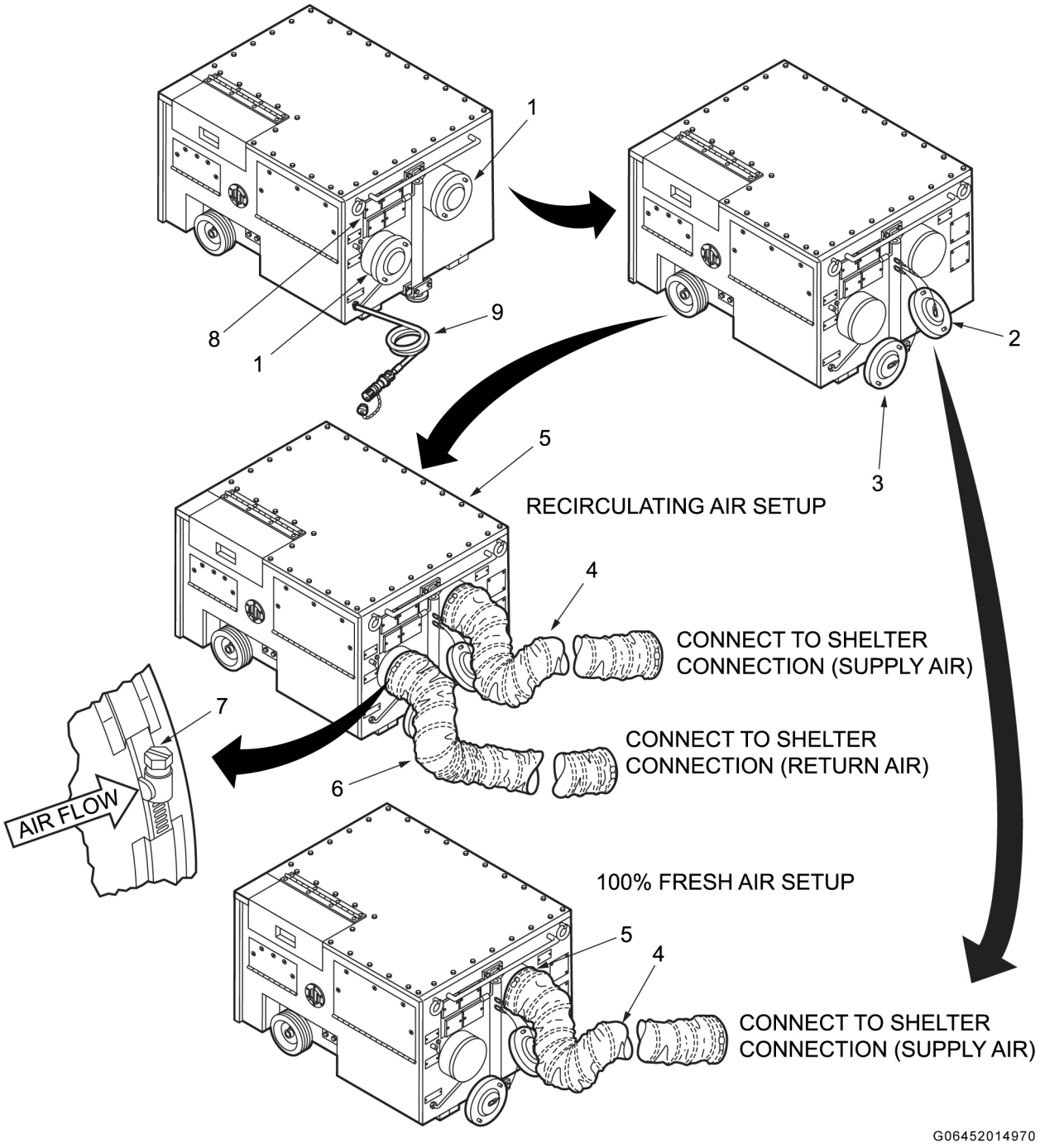


Figure 3. Supply Air Duct and Return Air Duct Connection.

5. For external fuel connection, proceed as follows:

SERVICE UPON RECEIPT - (CONTINUED)

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

a. Remove dust cap (Figure 4, Item 3) from external fuel port (Figure 4, Item 2).
b. Remove dust cap (Figure 4, Item 6) from external fuel hose (Figure 4, Item 4), quick disconnect and attach the hose to the unit external fuel port (Figure 4, Item 2).
c. Remove the plug (Figure 4, Item 5) from external fuel hose (Figure 4, Item 4) and connect the hose to the external fuel source.

CAUTION

The INTERNAL TANK/EXTERNAL TANK selector valve must be fully positioned to either setting. Any selector valve setting between INTERNAL TANK and EXTERNAL TANK may result in fuel starvation and damage to the fuel pump.

d. Set the fuel selector valve (Figure 4, Item 1) to the EXTERNAL TANK position. The handle on the fuel selector valve must be horizontal and pointing to the right.

SERVICE UPON RECEIPT - (CONTINUED)

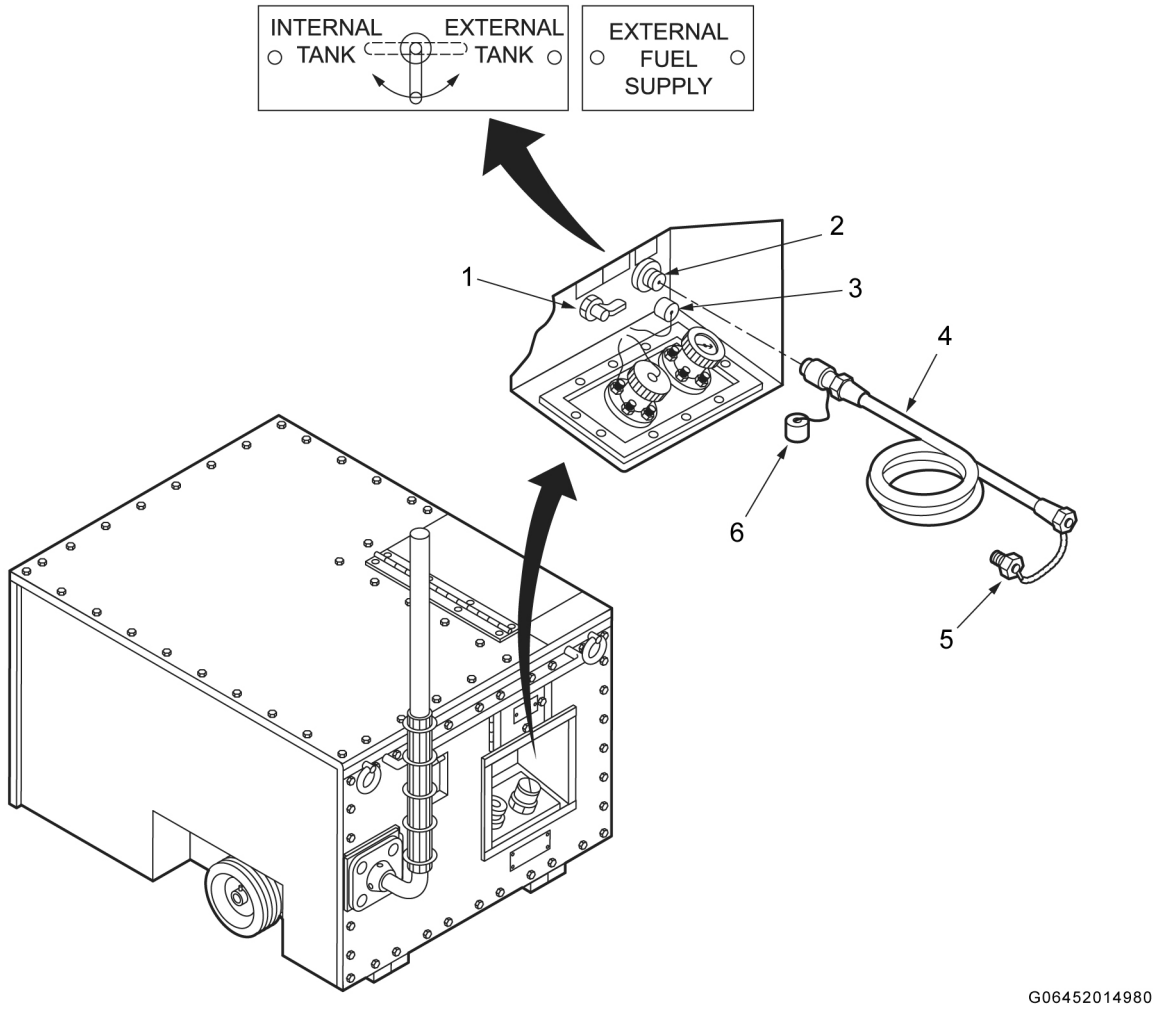


Figure 4. External Fuel Source Connection.

6. For connection of the external power cable adapter cord (Figure 5, Item 4) proceed as follows:
   a. Loosen three screws (Figure 5, Item 6) on the power source distribution panel (Figure 5, Item 1).

NOTE

The external power cable adapter cord is designed to attach to a 120 volt, 50/60 hertz, single-phase, grounded screw lug-type power source or facility power.

   b. Connect black wire (Figure 5, Item 5) to power source connection and tighten screw (Figure 5, Item 6).
   c. Connect white wire (Figure 5, Item 2) to power source connection and tighten screw (Figure 5, Item 6).
   d. Connect green wire (Figure 5, Item 3) to power source ground connection and tighten screw (Figure 5, Item 6).

SERVICE UPON RECEIPT - (CONTINUED)

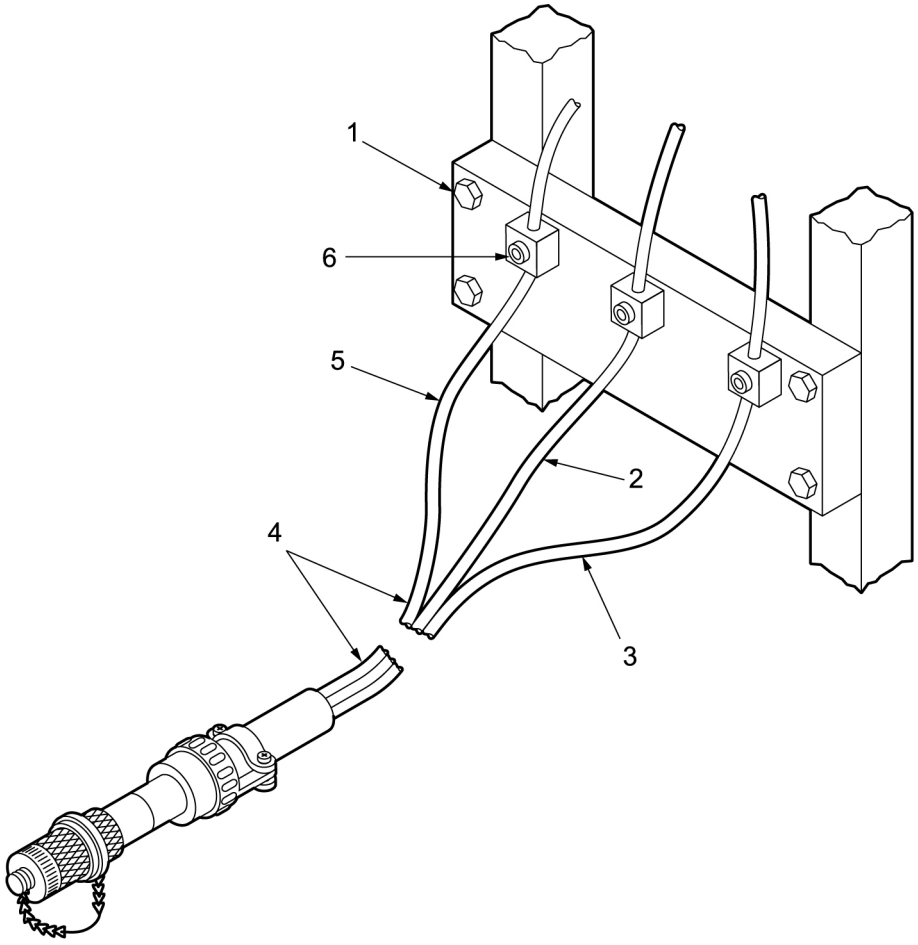


Figure 5. External Power Cable Adapter Cord.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

EXHAUST PIPE SERVICE AND REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Brush, Medium Bristle (Tool Set, SATS) (WP 0117, Item 2)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

EXHAUST PIPE SERVICE AND REPLACEMENT

Removal

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

1. Remove pipe and guard assembly (Figure 1, Item 1).
2. Remove four screws (Figure 1, Item 2), exhaust cover plate (Figure 1, Item 3) and exhaust elbow (Figure 1, Item 4).

Cleaning

1. Clean exhaust pipe section interiors and exteriors with a medium bristle brush (WP 0113, Table 2. , Item 6) to remove dirt and soot.

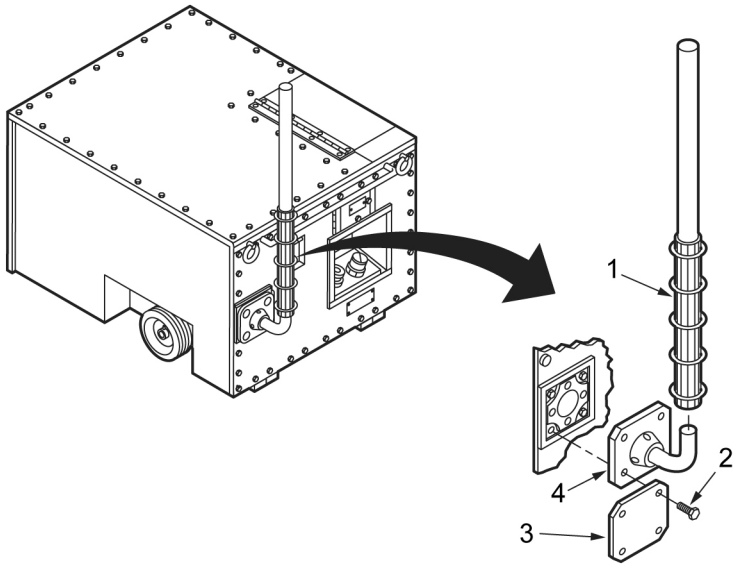
Inspection

1. Inspect screws (Figure 1, Item 2) for stripped or damaged threads.
2. Inspect exhaust elbow (Figure 1, Item 4) for cracked welds, cracked or damaged mounting plate.
3. Inspect pipe and guard assembly (Figure 1, Item 1) for dents, holes, cracks, broken welds, corrosion and secure mounting.

Installation

1. Install exhaust elbow (Figure 1, Item 4). Install exhaust cover plate (Figure 1, Item 3) on bottom mount and install four screws (Figure 1, Item 2).
2. Install pipe and guard assembly (Figure 1, Item 1) onto exhaust elbow (Figure 1, Item 4).

EXHAUST PIPE SERVICE AND REPLACEMENT - (CONTINUED)



G06452015500

Figure 1. Exhaust Pipe Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FLEXIBLE AIR DUCTS REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

NOTE

Removal and installation is typical for both ducts.

FLEXIBLE AIR DUCTS REPLACEMENT

Removal

1. Loosen clamps (Figure 1, Item 1) on both ends of duct (Figure 1, Item 3) and remove from unit (Figure 1, Item 2) and shelter connector.

Installation

1. Install duct (Figure 1, Item 3) on unit (Figure 1, Item 2) with arrow facing direction of air flow.
2. Install other end of duct (Figure 1, Item 3) to shelter connector.
3. Tighten clamps (Figure 1, Item 1) on both ends of duct (Figure 1, Item 3) securely.

FLEXIBLE AIR DUCTS REPLACEMENT - (CONTINUED)

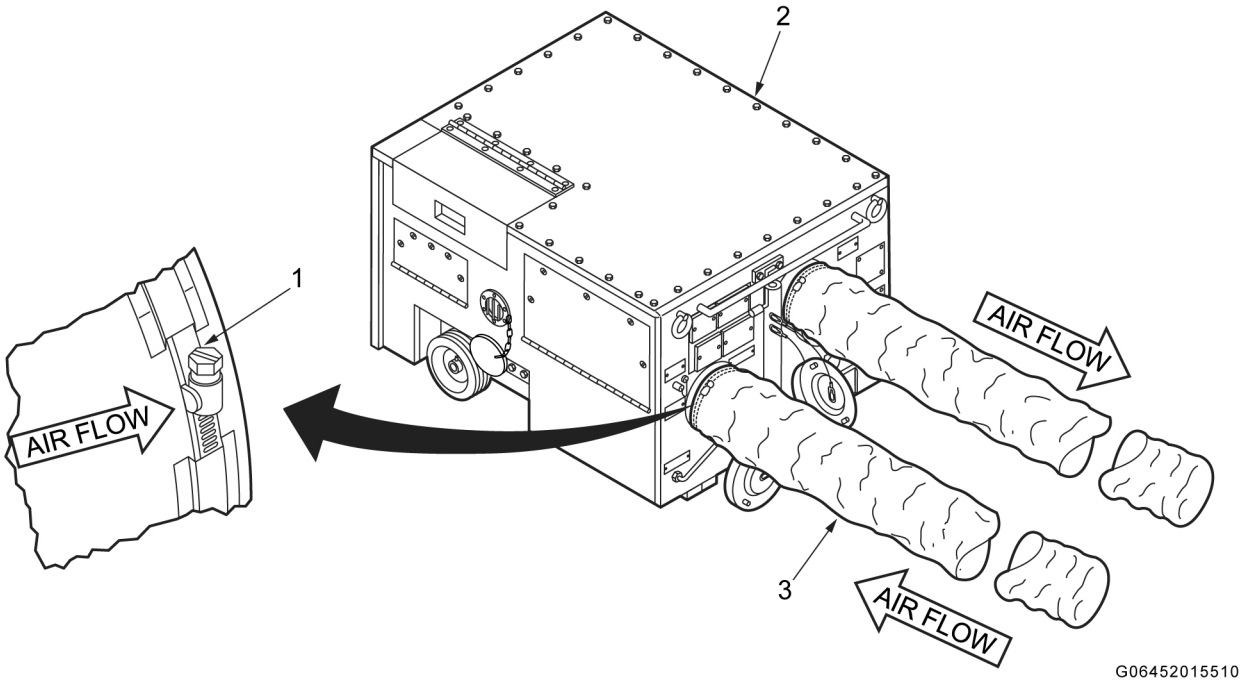


Figure 1. Air Duct Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CONTROL BOX COVER ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Bit Set (Tool Set, SATS) (WP 0117, Item 1)
Drill (Tool Set, SATS) (WP 0117, Item 4)
Face Shield (Tool Set, SATS) (WP 0117, Item 5)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For first aid instructions, refer to FM 4-25.11,First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

CONTROL BOX COVER ASSEMBLY REPLACEMENT

Removal

1. Remove four screws (Figure 1, Item 2) connecting the cover hinge to the ASH (Figure 1, Item 4).
2. Pull cover (Figure 1, Item 5) up to unlatch clip (Figure 1, Item 6) from the keeper bar (Figure 1, Item 3) and remove cover from the ASH.

Installation

1. Orient the cover (Figure 1, Item 5) correctly over the ASH (Figure 1, Item 4) so that the clip (Figure 1, Item 6) aligns with the keeper bar (Figure 1, Item 3) and push down on cover to seat it over the controls.
2. Align the four holes in hinge (Figure 1, Item 1) and unit (Figure 1, Item 4).
3. Apply anti-seize compound (WP 0116, , Item 2) to four screws (Figure 1, Item 2) and install them through the hinge (Figure 1, Item 1) and into the ASH.

CONTROL BOX COVER ASSEMBLY REPLACEMENT - (CONTINUED)

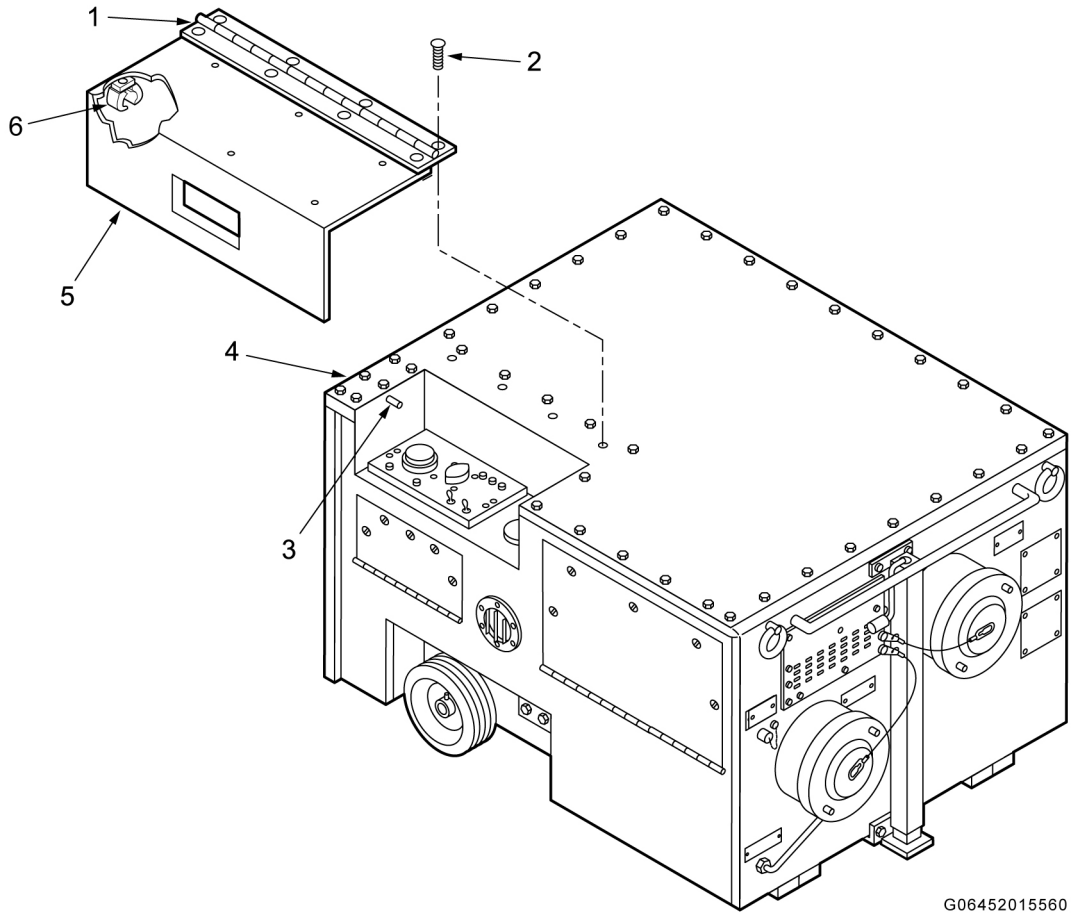


Figure 1. Control Box Cover Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TOP PANEL ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Lockwashers (WP 0095, Figure 4, Item 2)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Control box cover removed, WP 0018

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

TOP PANEL ASSEMBLY REPLACEMENT

Removal

NOTE

Depending on the ASH model, the top panel is attached using twenty-eight or thirty-eight sets of hardware. Remove the quantity of hardware required by the ASH under repair. Panels are interchangeable with all units.

1. Remove screws (Figure 1, Item 2), lockwashers (Figure 1, Item 3) and flat washers (Figure 1, Item 4) from top panel (Figure 1, Item 1). Discard lockwashers.
2. Remove top panel (Figure 1, Item 1) from frame (Figure 1, Item 5).

Installation

1. Position top panel (Figure 1, Item 1) on top of frame (Figure 1, Item 5).

NOTE

Depending on the ASH model, the top panel is attached using twenty-eight or thirty-eight sets of hardware. Remove the quantity of hardware required by the ASH under repair. Panels are interchangeable with all units.

2. Apply anti-seize compound (WP 0116, , Item 2) to screws (Figure 1, Item 2). Install flat washers (Figure 1, Item 4), lockwashers (Figure 1, Item 3), and screws (Figure 1, Item 2).
3. If installing a 38-hole top panel on a 28-hole frame, fill the unused holes in the panel with sealing compound to prevent corrosion.

TOP PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

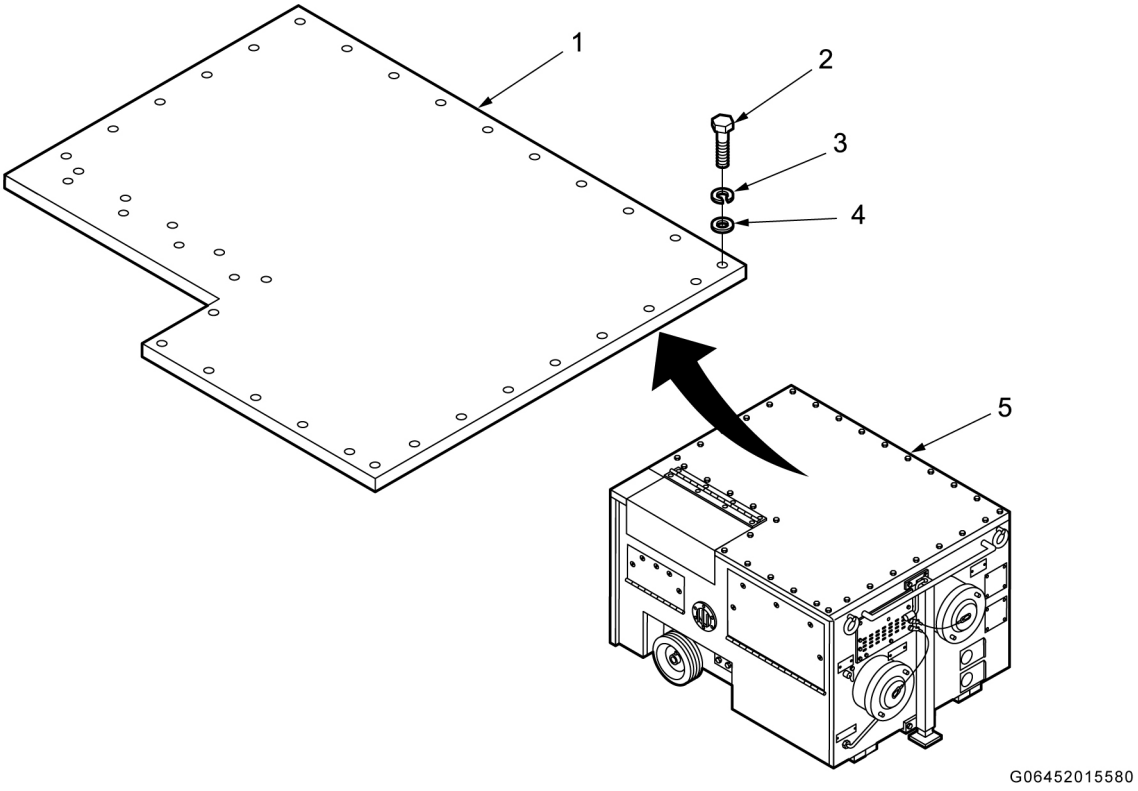


Figure 1. Top Panel Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

REAR PANEL ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Bit Set (Tool Set, SATS) (WP 0117, Item 1)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Lockwasher (WP 0095, Figure 5, Item 2)
Lockwasher (WP 0095, Figure 5, Item 6)
Sealing Compound (WP 0116, Item 12)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1

Equipment Condition
ASH disconnected from power source
Exhaust pipe and elbow removed, WP 0016

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

For fuel spills, refer to 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

REAR PANEL ASSEMBLY REPLACEMENT

Removal

1. Remove four machine bolts (Figure 1, Item 11) and remove exhaust protective cover (Figure 1, Item 12).
2. Remove four screws (Figure 1, Item 13), four lockwashers (Figure 1, Item 14), four flat washers (Figure 1, Item 15), and seal plate (Figure 1, Item 16). Remove sealant (Figure 1, Item 17). Discard lockwashers.
3. Remove ten screws (Figure 1, Item 2), ten lockwashers (Figure 1, Item 3), ten flat washers (Figure 1, Item 4) and isolator frame (Figure 1, Item 5). Discard lockwashers.
4. Open right rear door (Figure 1, Item 1) to access metal fuel-line tubing.
5. Disconnect tubing (Figure 1, Item 10) from elbow (Figure 1, Item 8) and tubing (Figure 1, Item 9) from straight connector (Figure 1, Item 7). Cover tubing (Figure 1, Item 9) and (Figure 1, Item 10) to prevent any foreign matter from entering tubing. Remove dust cap (Figure 1, Item 6).
6. Remove sealant(Figure 1, Item 24) from sight tube pipe (Figure 1, Item 26).
7. Remove thirty-three screws (Figure 1, Item 20), thirty-three lockwashers (Figure 1, Item 21), and thirty-three flat washers (Figure 1, Item 22). Discard lockwashers.

REAR PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

8. Remove rear panel (Figure 1, Item 19) from frame (Figure 1, Item 18) by gently pulling the panel over the insulator (Figure 1, Item 23).
9. Loosen setscrew and remove ring (Figure 1, Item 25) from sight tube (Figure 1, Item 26).

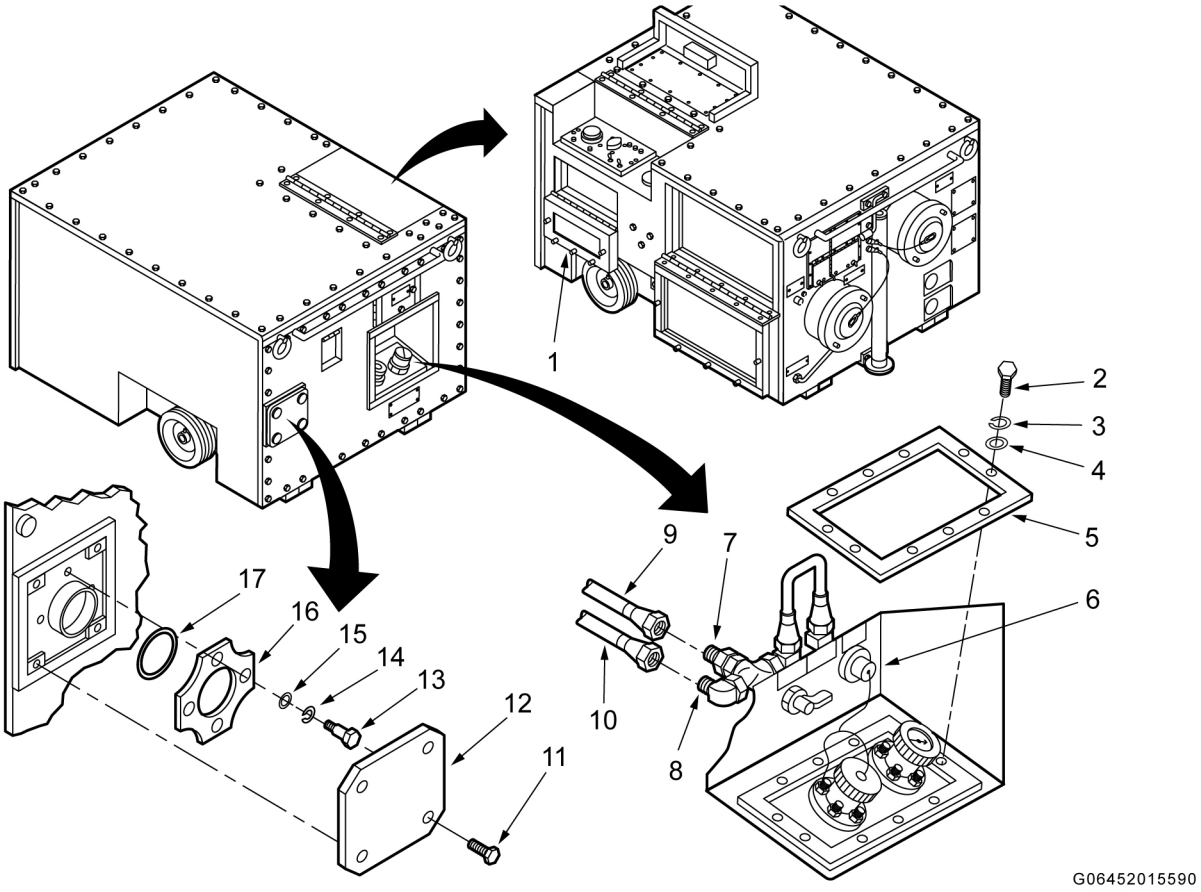


Figure 1. Rear Panel Removal (Sheet 1 of 2).

REAR PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

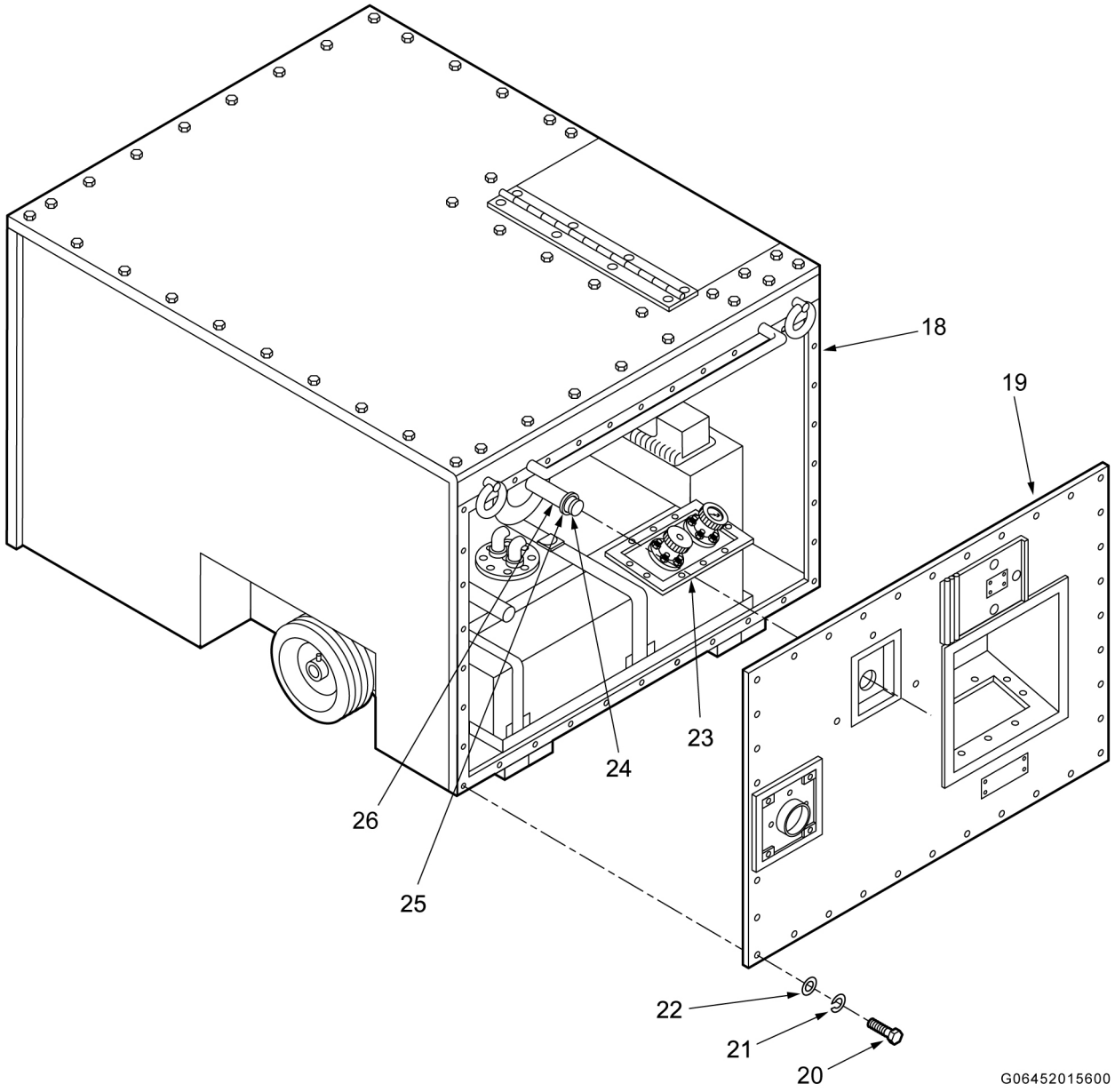


Figure 1. Rear Panel Removal (Sheet 2 of 2).

Installation

1. Install ring (Figure 2, Item 6) on sight glass tube (Figure 2, Item 7), but do not tighten.
2. Install rear panel (Figure 2, Item 1) over insulator (Figure 2, Item 5). Gently pull insulator through rear panel so it rests on the outside of rear panel.
3. Apply anti-seizing compound (WP 0116, , Item 2) to screws (Figure 2, Item 2). Install thirty-three flat washers (Figure 2, Item 4), thirty-three lockwashers (Figure 2, Item 3), thirty-three screws (Figure 2, Item 2).
4. Apply a heavy bead of sealant (WP 0116, Table 1. , Item 12) around sight glass tube (Figure 2, Item 7) so it goes through the gap and provides a tight seal.

REAR PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

5. Push ring (Figure 2, Item 6) up against rear panel (Figure 2, Item 1) and tighten.
6. Remove adhesive tape from metal-tube fuel lines (Figure 2, Item 8) and (Figure 2, Item 9). Connect metal-tube fuel line (Figure 2, Item 8) to elbow (Figure 2, Item 10) and metal-tube fuel line (Figure 2, Item 9) to straight connector (Figure 2, Item 11).
7. Install dust cap (Figure 2, Item 17) onto quick disconnect coupling (Figure 2, Item 16).
8. Install isolator frame (Figure 2, Item 15), ten flat washers (Figure 2, Item 14), ten lockwashers (Figure 2, Item 13) and ten screws (Figure 2, Item 12).
9. Apply sealant around exhaust pipe (Figure 2, Item 24).
10. Install seal plate (Figure 2, Item 23), four flat washers (Figure 2, Item 22), four lockwashers (Figure 2, Item 21), and four screws (Figure 2, Item 20).
11. Install cover (Figure 2, Item 19) and secure with four screws (Figure 2, Item 18).

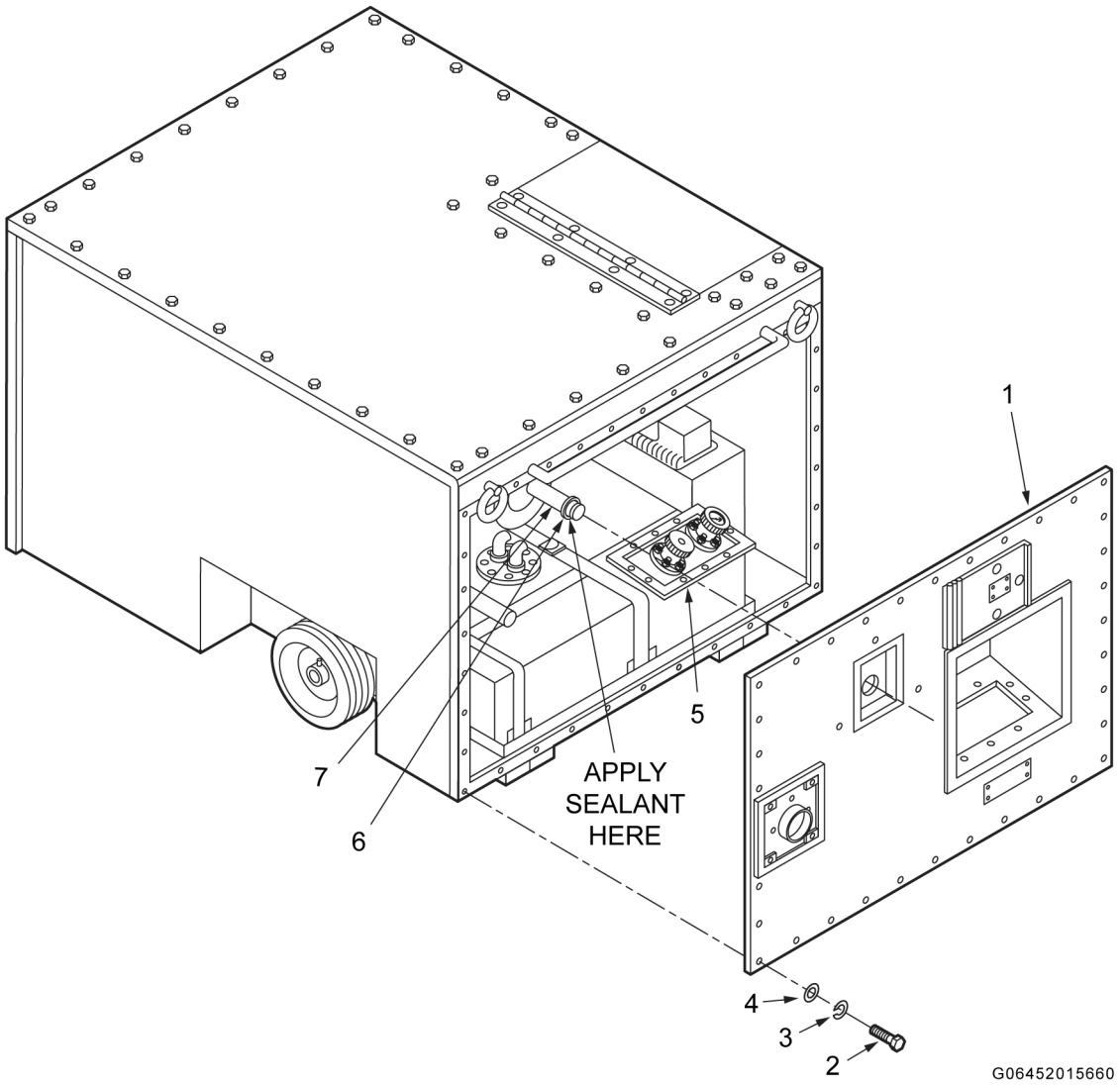


Figure 2. Rear Panel Installation (Sheet 1 of 2).

REAR PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

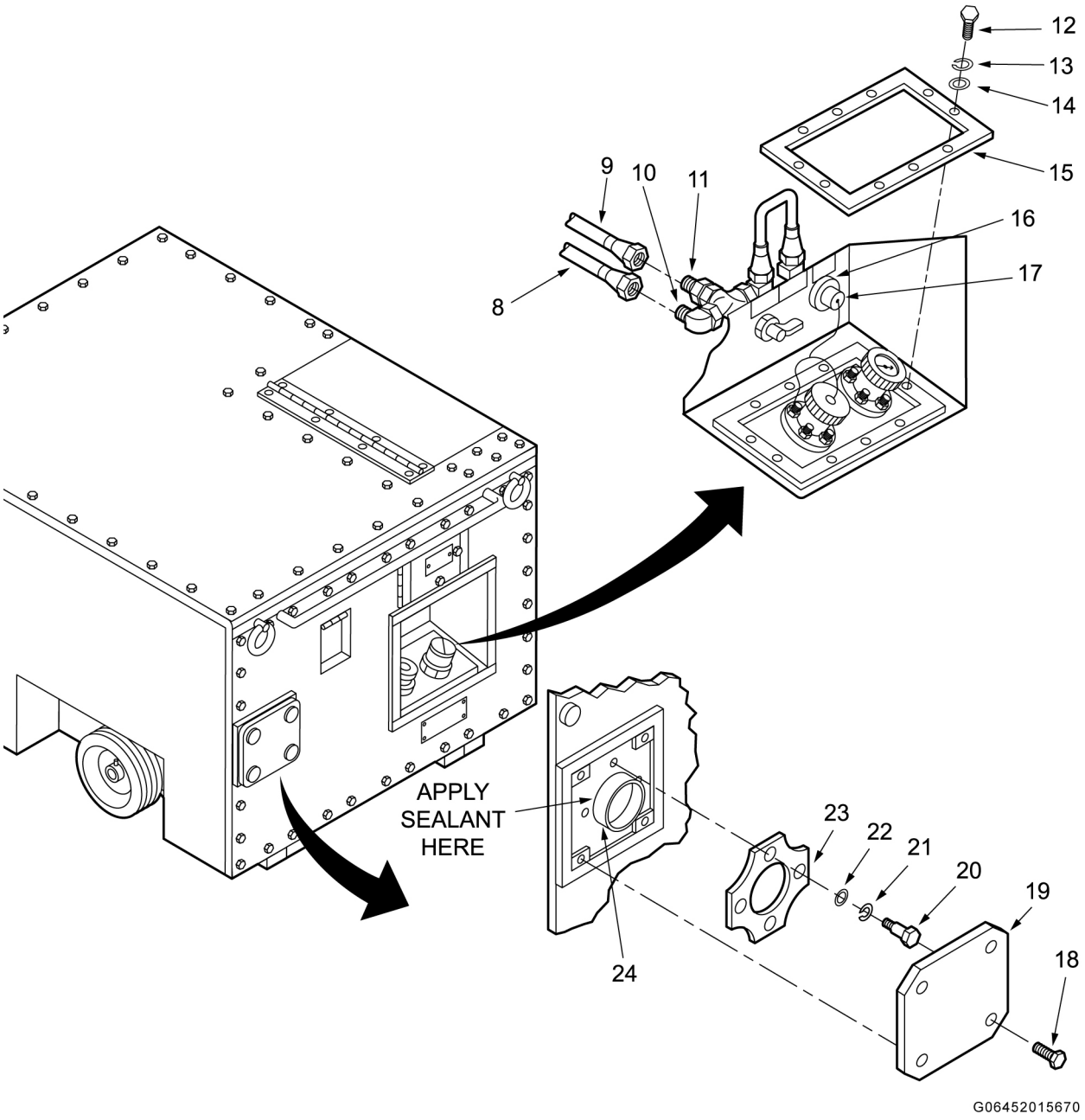


Figure 2. Rear Panel Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FRONT AND REAR SIDE DOOR ASSEMBLIES REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Bit Set (Tool Set, SATS) (WP 0117, Item 1)
Drill (Tool Set, SATS) (WP 0117, Item 4)
Face Shield (Tool Set, SATS) (WP 0117, Item 5)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Riveter, Blind, Hand (WP 0117, Item 12)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Insulation (WP 0088, Figure 2)
Insulation (WP 0088, Figure 3)
Rivet (WP 0095, Figure 6, Item 3)
Rivet (WP 0095, Figure 7, Item 3)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For first aid instructions, refer to FM 4-25.11,First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

NOTE

Both door assemblies are similar in construction. The differences are in size and the number of rivets used to secure the hinges. The rear panel is smaller and uses four rivets while the front door is larger and uses five rivets.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPLACEMENT

Front Side Door Removal

1. Open front side door.
2. Remove insulation (Figure 1, Item 4).
3. Remove nut (Figure 1, Item 2), lockwasher (Figure 1, Item 3), screw (Figure 1, Item 5) and ground wire (Figure 1, Item 6).
4. Drill out rivets (Figure 1, Item 7) connecting hinge (Figure 1, Item 1) to the bottom horizontal face of the door opening.

Front Side Door Installation

1. Install hinge (Figure 1, Item 1) with rivets (Figure 1, Item 7) to the bottom horizontal face of the door opening.
2. Install ground wire (Figure 1, Item 6), screw (Figure 1, Item 5), lockwasher (Figure 1, Item 3) and nut (Figure 1, Item 2).

FRONT AND REAR SIDE DOOR ASSEMBLIES REPLACEMENT - (CONTINUED)

3. Cut insulation (Figure 1, Item 4) 13-11/16 in by 21-13/16 in. Notch the insulation by using the original insulation as a template, or by following , Figure 21, or measure and notch the new insulation to provide clearance for the door-closing hardware. Install insulation against the inner face of the door.
4. Close door.

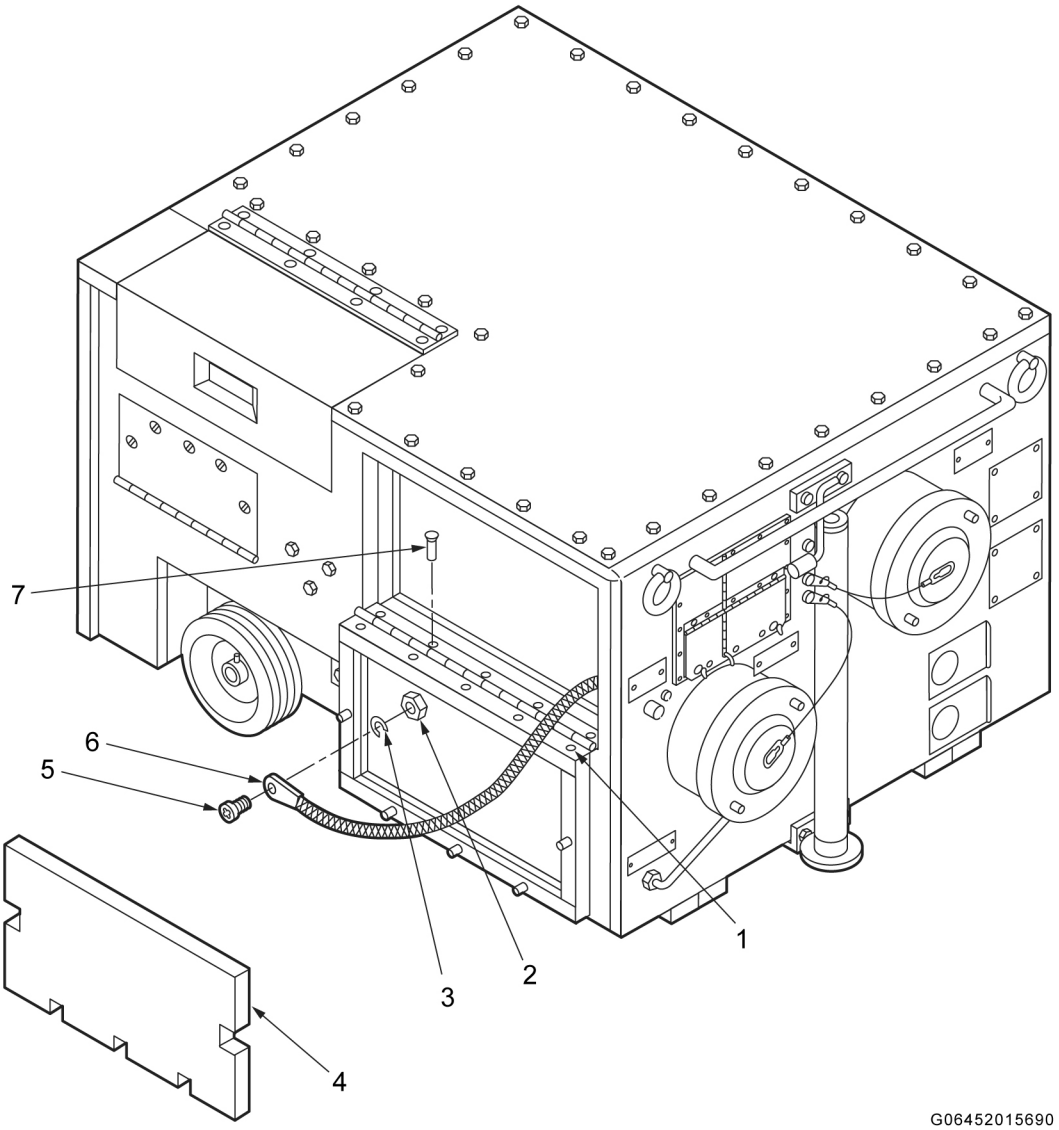


Figure 1. Front Side Door Removal/Installation.

Rear Side Door Removal

1. Open rear side door and remove insulation (Figure 2, Item 8) from door.
2. Remove nut (Figure 2, Item 3), lockwasher (Figure 2, Item 4), screw (Figure 2, Item 7), and ground wire (Figure 2, Item 5) from door.
3. Drill out rivets (Figure 2, Item 1) connecting hinge (Figure 2, Item 2) to the bottom vertical face of the door opening.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPLACEMENT - (CONTINUED)

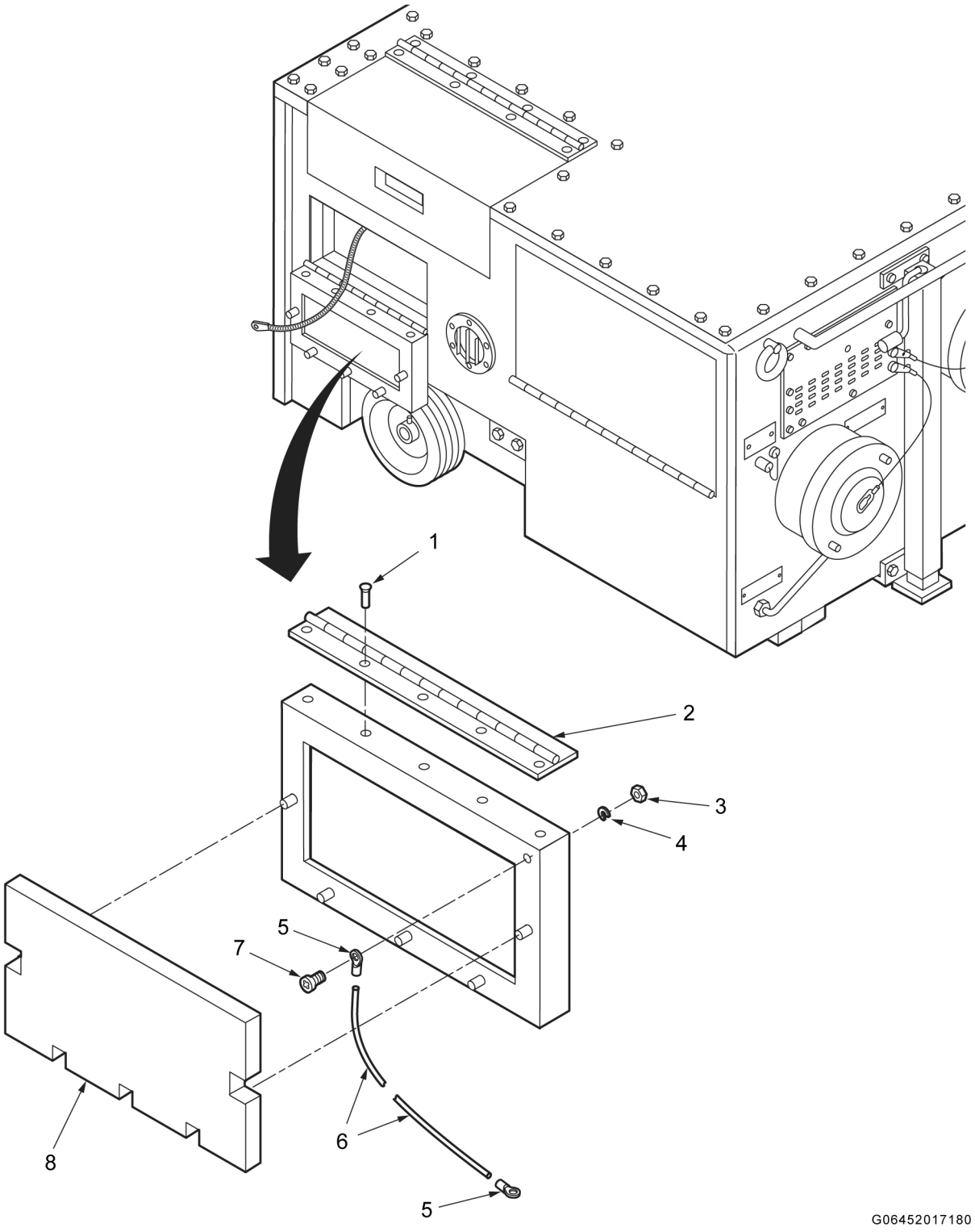


Figure 2. Rear Side Door Removal/Installation.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPLACEMENT - (CONTINUED)

Rear Side Door Installation

1. Install hinge (Figure 2, Item 2) with rivets (Figure 2, Item 1) to the bottom horizontal face of the door frame.
2. Install ground wire (Figure 2, Item 5) with screw (Figure 2, Item 7), lockwasher (Figure 2, Item 4), and nut (Figure 2, Item 3).
3. Cut insulation (Figure 2, Item 8) 9-1/2 in by 15-13/16 in. Notch the insulation by using the original insulation as a template, or by following , Figure 4or measure and notch the new insulation to provide clearance for the door-closing hardware. Install insulation inside door frame.
4. Close door.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

DUCT COVER ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Lockwasher (WP 0118, Item 17)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

DUCT COVER ASSEMBLY REPLACEMENT

Removal

NOTE

Both covers are the same.

1. Loosen two screws (Figure 1, Item 9).
2. Rotate duct cover (Figure 1, Item 6) until the screw heads line up with the large ends of the cover's keyhole-shaped cutouts. Remove cover from duct.
3. Remove screw (Figure 1, Item 4), lockwasher (Figure 1, Item 3), flat washer (Figure 1, Item 2), and cable (Figure 1, Item 1). Discard lockwasher.

Installation

1. Apply anti-seize compound to screw (Figure 1, Item 4). Install cable (Figure 1, Item 1), screw (Figure 1, Item 4), flat washer (Figure 1, Item 3), and lockwasher (Figure 1, Item 2).
2. Align duct cover (Figure 1, Item 6) so two screws (Figure 1, Item 9) protrude through the large ends of the cover's keyhole-shaped cutouts.
3. Rotate the duct cover (Figure 1, Item 6) so that the screw shafts are in the narrow portion of the keyhole-shaped cutouts, and then tighten the two screws (Figure 1, Item 9).

DUCT COVER ASSEMBLY REPLACEMENT - (CONTINUED)

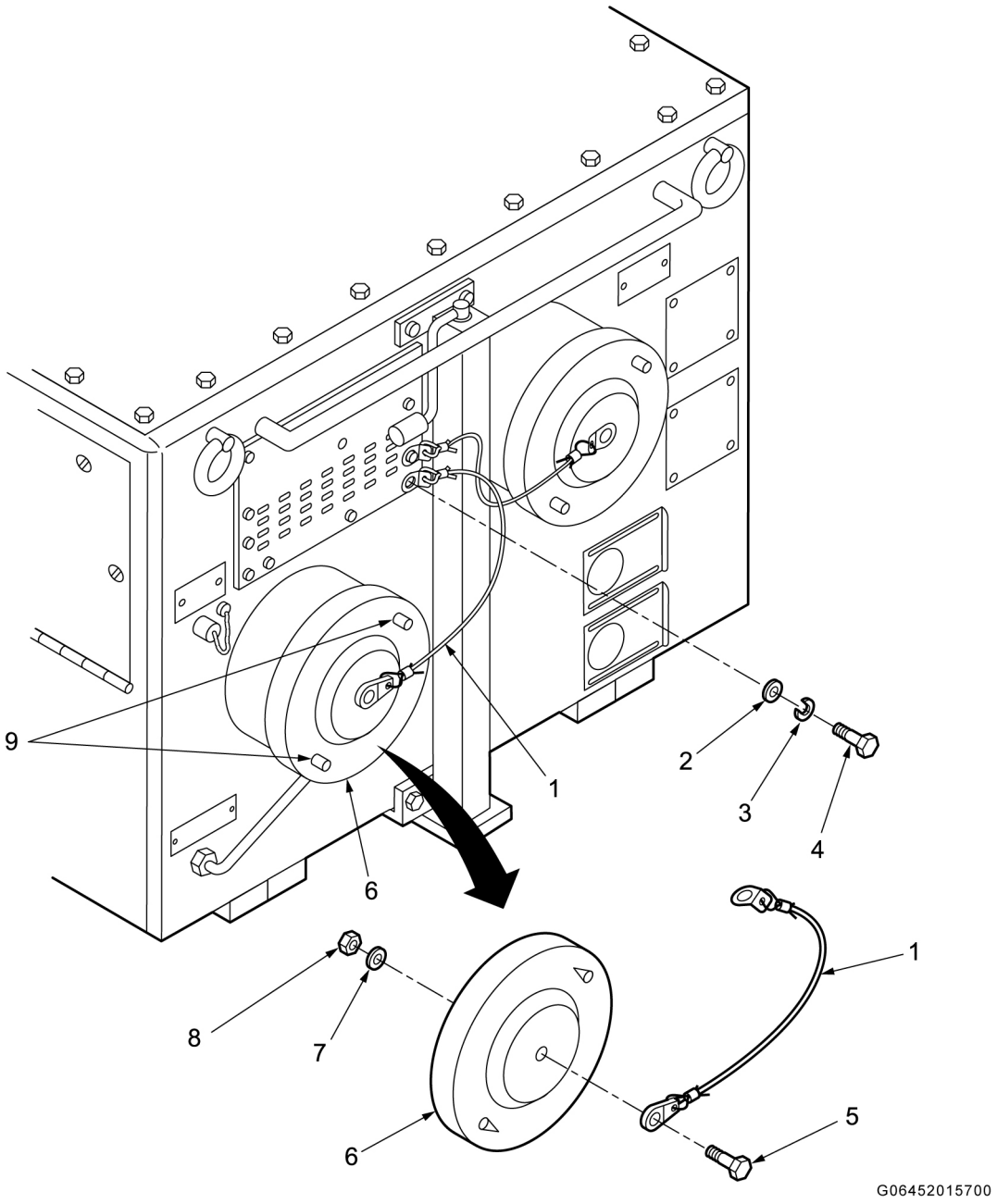


Figure 1. Duct Cover Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

RETURN/SUPPLY SCREEN SERVICE AND REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwashers (WP 0118, Item 21)
Rags, Wiping (WP 0116, Item 11)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Supply and return duct cover assemblies removed, WP 0017

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

RETURN/SUPPLY SCREEN SERVICE AND REPLACEMENT

Removal

1. Remove four nuts (Figure 1, Item 4), four lockwashers (Figure 1, Item 3), four screws (Figure 1, Item 1), and eight flat washers (Figure 1, Item 2).
2. Remove supply screen (Figure 1, Item 5).
3. Repeat steps 1. and 2. to remove second screen (Figure 1, Item 5).

Inspection/Service

1. Inspect screens for dirt, grease, and soot. Clean with rags (WP 0116, , Item 11).
2. Inspect screens for broken wire mesh and/or cracked welds.

Installation

1. Install screen (Figure 1, Item 5).
2. Install eight flat washers (Figure 1, Item 2), four screws (Figure 1, Item 1), four lockwashers (Figure 1, Item 3) and four nuts (Figure 1, Item 4).
3. Repeat steps 1. and 2. to install second screen (Figure 1, Item 5).

RETURN/SUPPLY SCREEN SERVICE AND REPLACEMENT - (CONTINUED)

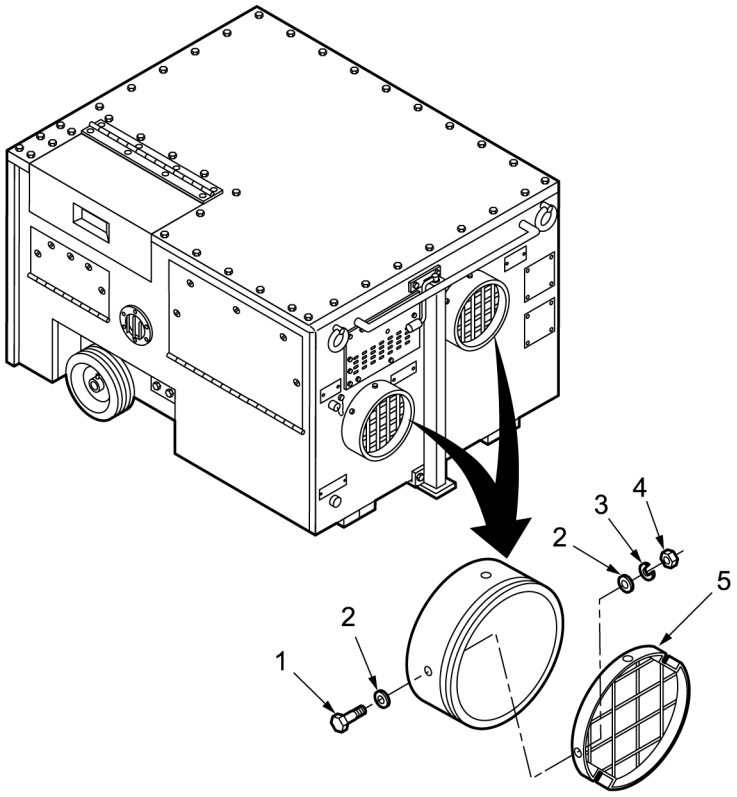


Figure 1. Return/Supply Screen Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CONTROL BOX PANEL ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket, Hourmeter (WP 0118, Item 8)
Lockwasher (WP 0118, Item 10)
Lockwasher (WP 0118, Item 11)
Lockwasher (WP 0118, Item 12)
Lockwasher (WP 0118, Item 21)
O-ring (WP 0118, Item 22)
O-ring (WP 0118, Item 25)
O-ring (WP 0118, Item 26)
O-ring (WP 0118, Item 28)
Tags, Marker (WP 0116, Item 15)
Terminal Splicer (WP 0118, Item 45)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For first aid instructions, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

NOTE

In order to replace the Control Box Panel Assembly, the components must be disassembled first using the disassembly procedures below, followed by the removal procedure. Then use the installation procedure to put the Control Box Panel Assembly back on, and if necessary use the assembly procedures to reconnect the wires and assemble the components.

CONTROL BOX PANEL ASSEMBLY REPLACEMENT

Mode Switch and Hourmeter Disassembly

1. Open control box cover (Figure 1, Item 6) and control panel lid (Figure 1, Item 5).
2. Remove screw (Figure 1, Item 7), knob (Figure 1, Item 8) and pin (Figure 1, Item 9).

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

3. Tag and disconnect sixteen wires (Figure 1, Item 14) from MODE switch (Figure 1, Item 16) by removing thirteen screws (Figure 1, Item 15).
4. Remove four screws (Figure 1, Item 3), four O-rings (Figure 1, Item 4) and MODE switch (Figure 1, Item 16).
5. Remove nut (Figure 1, Item 13) and sleeve (Figure 1, Item 12).
6. Tag and disconnect hourmeter wires (Figure 1, Item 11) and (Figure 1, Item 10).
7. Remove three self-locking nuts (Figure 1, Item 17), three flat washers (Figure 1, Item 18), ground wire (Figure 1, Item 19), three screws (Figure 1, Item 2), hourmeter (Figure 1, Item 1) and gasket (Figure 1, Item 20).
8. If necessary, retain gasket for use as a template for manufacturing a replacement IAW WP 0095, Figure 11, Item 2. Otherwise, discard gasket.

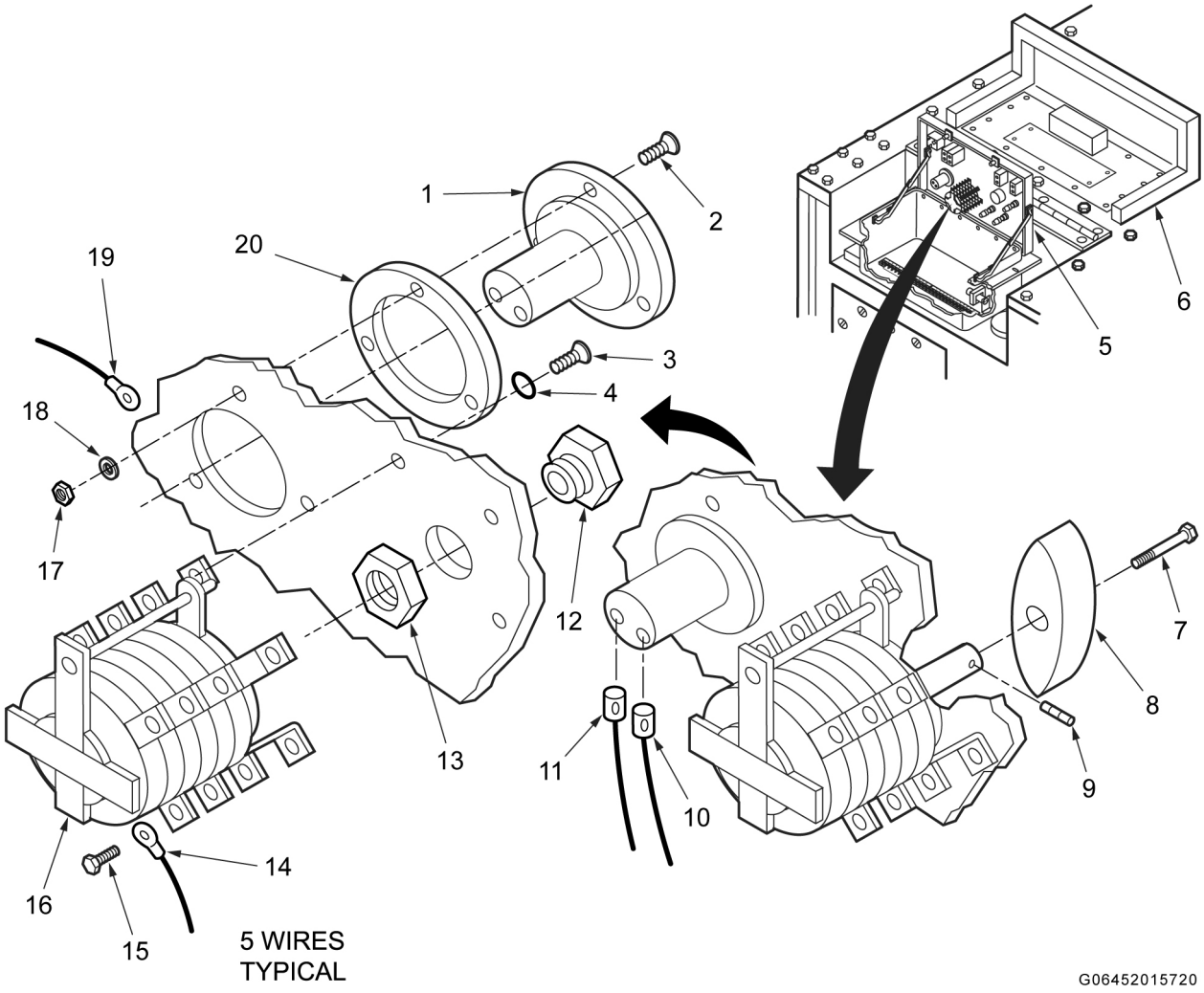


Figure 1. Control Box Panel: Mode Switch and Hourmeter Disassembly.

Thermostat and Power Circuit Breakers Disassembly

1. Tag and disconnect wires (Figure 2, Item 1) and (Figure 2, Item 11).
2. Remove two nuts (Figure 2, Item 13), two lockwashers (Figure 2, Item 12), two screws (Figure 2, Item 5), two O-rings (Figure 2, Item 4), POWER circuit breaker (Figure 2, Item 2) and O-ring (Figure 2, Item 3). Discard O-rings and lockwashers.
3. Tag and disconnect wires (Figure 2, Item 9) and (Figure 2, Item 10).
4. Remove nut (Figure 2, Item 6), THERMOSTAT circuit breaker (Figure 2, Item 8) and O-ring (Figure 2, Item 7). Discard O-ring.

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

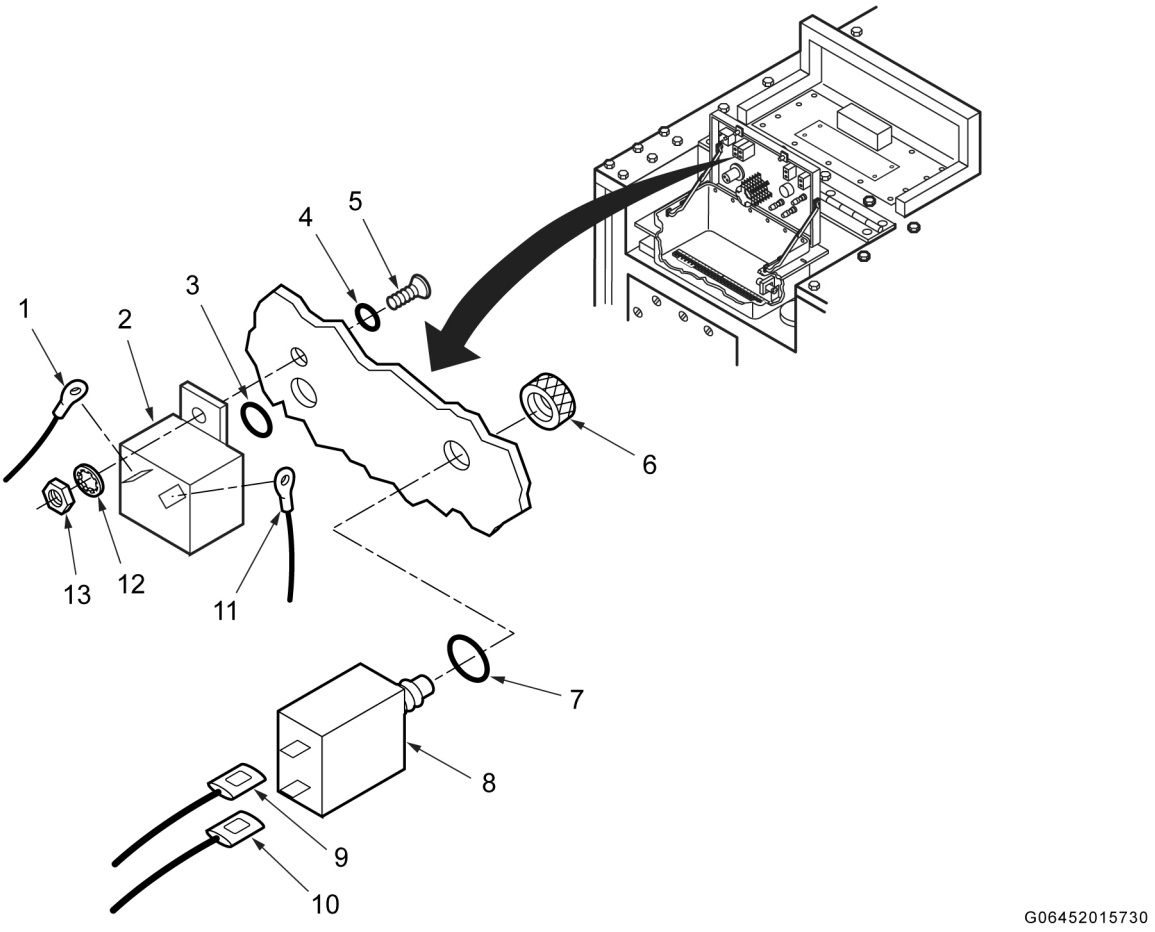


Figure 2. Control Box Panel: Thermostat and Power Circuit Breakers Disassembly.

Purge and Flame Reset Switches Disassembly

NOTE

Both switches are the same.

1. Remove extension (Figure 3, Item 4).
2. Tag and disconnect wires (Figure 3, Item 8) and (Figure 3, Item 9).
3. Remove nut (Figure 3, Item 3), lockwasher (Figure 3, Item 2), O-ring (Figure 3, Item 1), switch (Figure 3, Item 7), keyed washer (Figure 3, Item 5) and nut (Figure 3, Item 6). Discard O-ring.

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

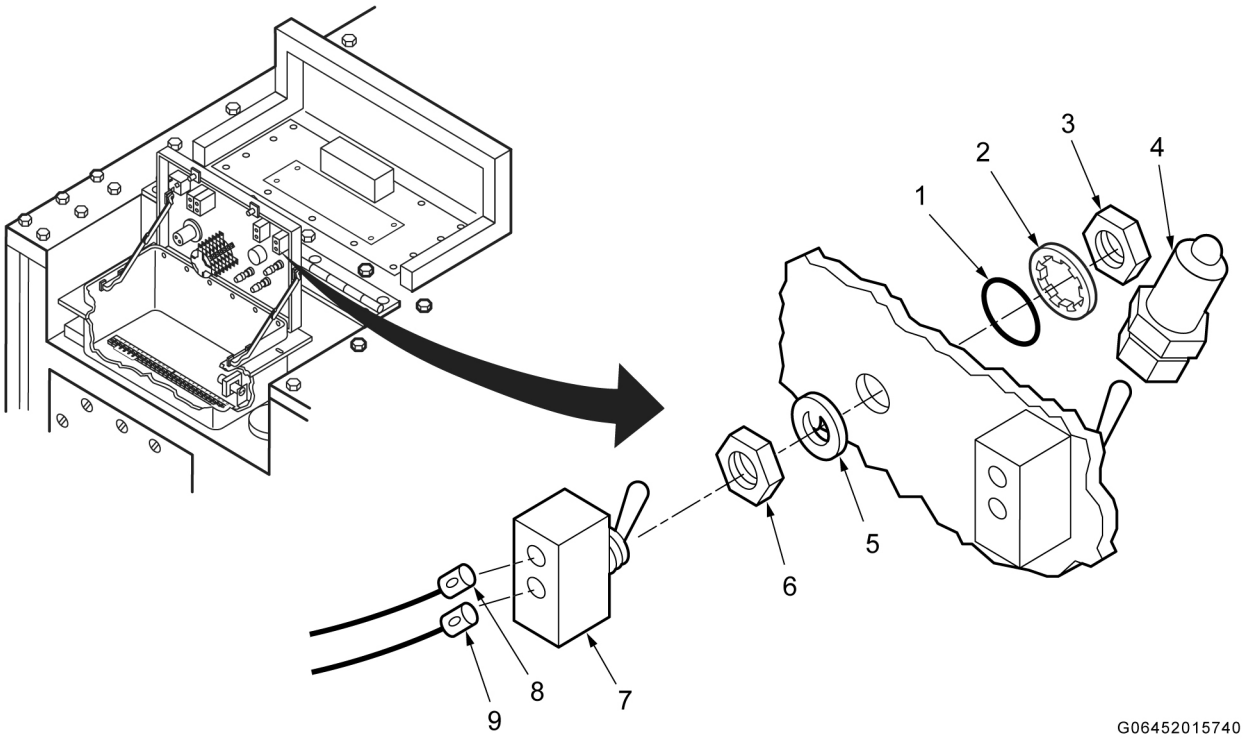


Figure 3. Control Box Panel: Purge and Flame Reset Switches Disassembly.

Flameout, High Temp and Power Lights Disassembly

NOTE

All three lights are the same. Only the cap colors differ. Power light is green; others are red.

1. Tag and disconnect two wires (Figure 4, Item 1).
2. Remove nut (Figure 4, Item 7), lockwasher (Figure 4, Item 6), gasket (Figure 4, Item 5) and light (Figure 4, Item 4).
3. Remove cap (Figure 4, Item 2) and bulb (Figure 4, Item 3).

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

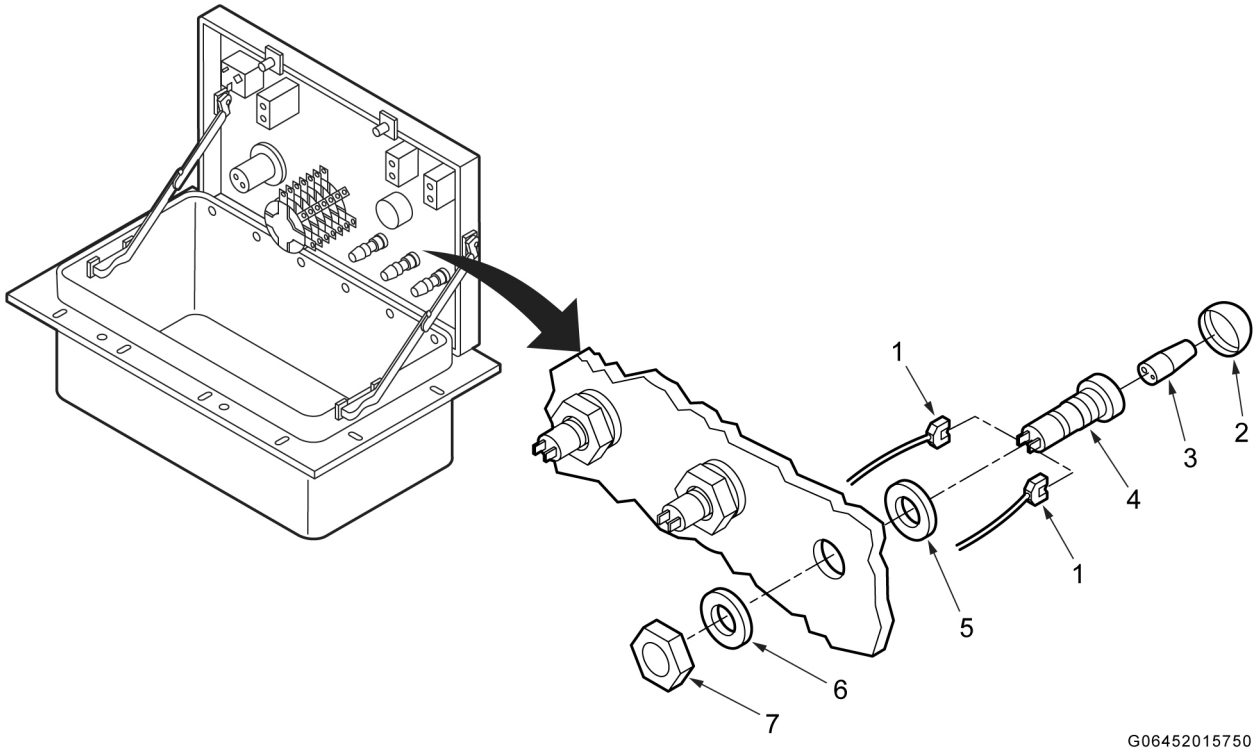


Figure 4. Control Box Panel: Flameout, High Temp and Power Lights Disassembly.

Transformer/Terminal Boards Disassembly

1. Tag and disconnect two wires (Figure 5, Item 1).
2. Tag and separate black wire (Figure 5, Item 5) and white wire (Figure 5, Item 3) at splices (Figure 5, Item 6). Discard splices.
3. Remove two nuts (Figure 5, Item 8), two lockwashers (Figure 5, Item 7), two screws (Figure 5, Item 4) and transformer (Figure 5, Item 2). Discard lockwashers.
4. Open right side rear door (Figure 5, Item 24), tag and disconnect wires on top and bottom of Terminal Board 1 (TB1) (Figure 5, Item 15) and TB3 (Figure 5, Item 11) and remove jumper (Figure 5, Item 14) and two terminals (Figure 5, Item 12).
5. Remove four nuts (Figure 5, Item 9), four lockwashers (Figure 5, Item 10), four screws (Figure 5, Item 13), TB1 (Figure 5, Item 15), TB3 (Figure 5, Item 11) and the two terminal marking strips (Figure 5, Item 16). Discard lockwashers.
6. Remove nut (Figure 5, Item 17), lockwasher (Figure 5, Item 18), tag and disconnect seven wires (Figure 5, Item 19). Discard lockwasher.
7. Remove nut (Figure 5, Item 20), two lockwashers (Figure 5, Item 21), screw (Figure 5, Item 23) and ground wire (Figure 5, Item 22). Tag wire. Discard lockwashers.

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

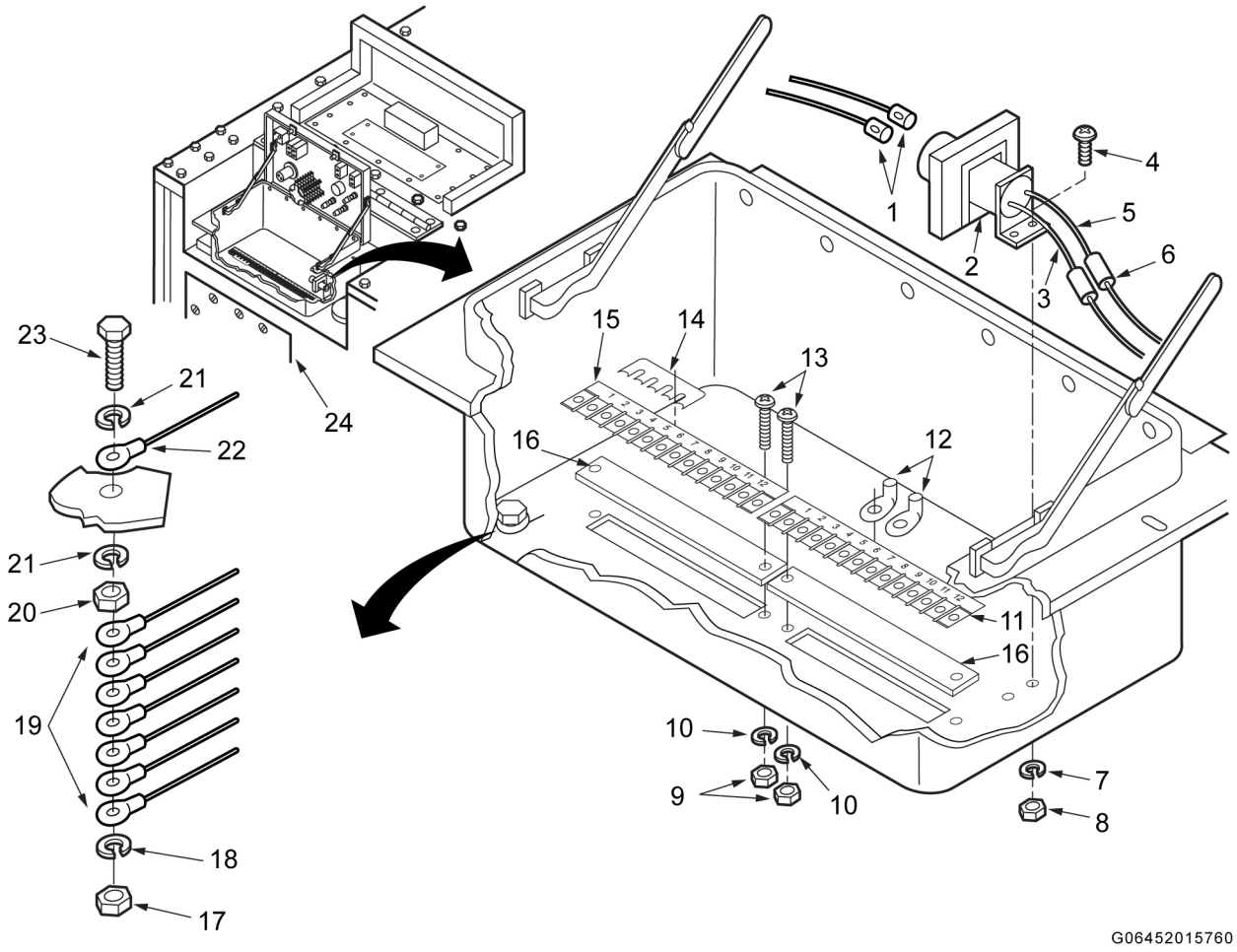


Figure 5. Control Box Panel: Transformer/Terminal Boards Disassembly.

Control Box Panel Removal

1. Open control box panel assembly (Figure 6, Item 2).
2. Remove two self-locking nuts (Figure 6, Item 7), two flat washers (Figure 6, Item 6), two screws (Figure 6, Item 5) and the top end of right support (Figure 6, Item 1).
3. Drill out two rivets (Figure 6, Item 8) and remove the bottom end of right support (Figure 6, Item 1).
4. Repeat steps 2. and 3. to remove the left support (Figure 6, Item 4).
5. Drill out six rivets (Figure 6, Item 3) and remove control box panel (Figure 6, Item 2).

Control Box Panel Installation

1. Install bottom right support (Figure 6, Item 1) by installing two rivets (Figure 6, Item 8).
2. Install two screws (Figure 6, Item 5), two flat washers (Figure 6, Item 6), and two self-locking nuts (Figure 6, Item 7), at the top end of right support (Figure 6, Item 1).
3. Repeat steps 1. and 2. to install the left support (Figure 6, Item 4).
4. Install six rivets (Figure 6, Item 3) to control box panel (Figure 6, Item 2).

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

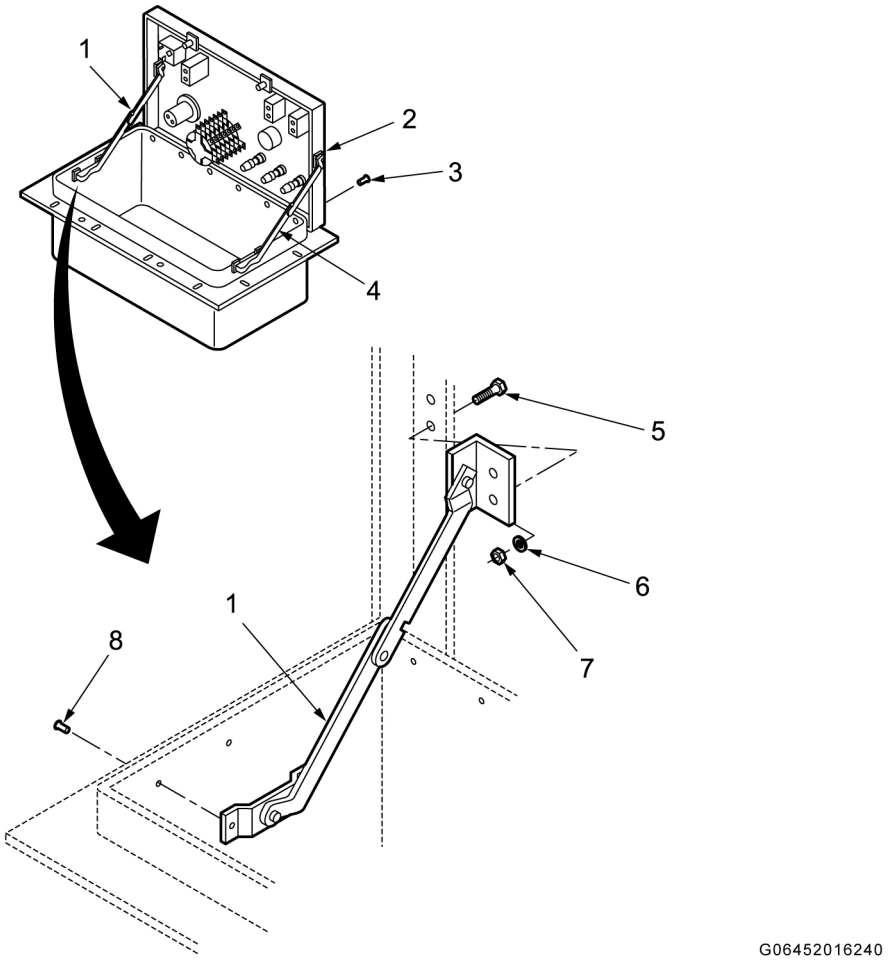


Figure 6. Control Box Panel Removal/Installation.

Terminal Boards/Transformer Assembly

1. Install ground wire (Figure 7, Item 14), two lockwashers (Figure 7, Item 13), screw (Figure 7, Item 15) and nut (Figure 7, Item 12).
2. Install seven wires (Figure 7, Item 11), lockwashers (Figure 7, Item 10) and nut (Figure 7, Item 9).
3. Install two terminal marking strips (Figure 7, Item 1), terminal boards TB3 (Figure 7, Item 6) and TB1 (Figure 7, Item 2), four screws (Figure 7, Item 4), four lockwashers (Figure 7, Item 7), and four nuts (Figure 7, Item 8).
4. Connect wires to top of TB3 (Figure 7, Item 6) as follows.
   a. Connect wire CB2-2 to TB3-1.
   b. Connect wire CB2-1 to TB3-2.
   c. Connect wire S1-13 to TB3-2.
   d. Connect wire TR2-R to TB3-3.
   e. Connect wire S1-16 to TB3-5.
   f. Install two terminals (Figure 7, Item 5) and TB3-6 and TB3-7.
   g. Connect wire TT-POS to TB3-8.
   h. Connect wire DS2-POS to TB3-10.
   i. Connect wire DS3-POS to TB3-11.

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

5. Connect wires to top of TB1 (Figure 7, Item 2)as follows:
   a. Connect wire CB1-1 to TB1-1.
   b. Connect wire S1-1 to TB1-2.
   c. Position jumper bar (Figure 7, Item 3) between terminals TB1-3 through TB1-7
   d. Connect wires S1-2 and DS1-NEG to TB1-3
   e. Connect wire TT-NEG to TB1-5
   f. Connect wire D52-NE6 to TB1-6
   g. Connect wires DS3-NEG and TR2-WHT to TB1-7
   h. Connect wires S1-6 and DS1-POS to TB1-8
   i. Connect wire S4-1 to TB1-9
   j. Connect wires S1-11 and S7-2 to TB1-10
   k. Connect wire S7-1 to TB1-12

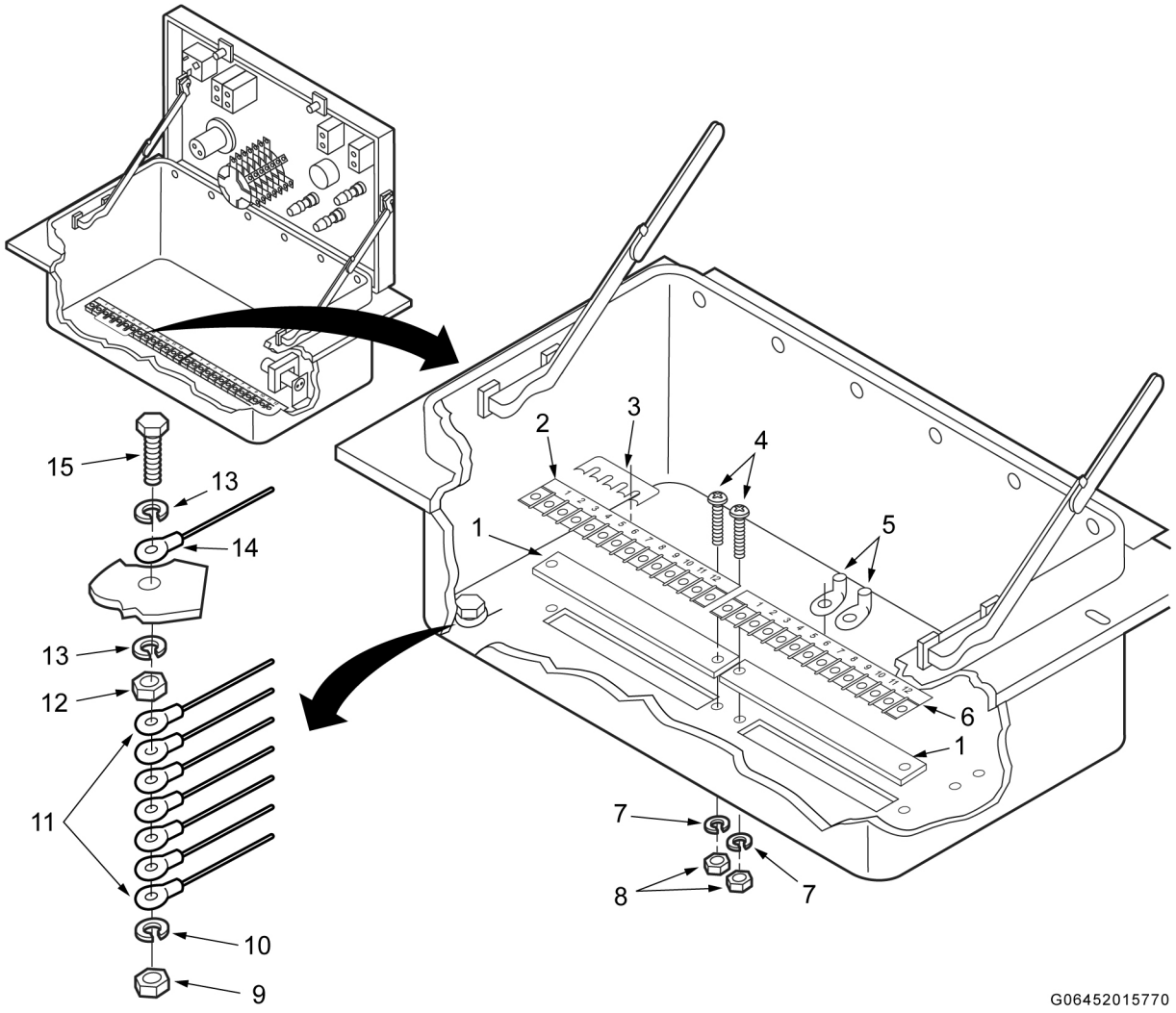


Figure 7. Control Box Panel: Terminal Boards/Transformer Assembly (Sheet 1 of 3).

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

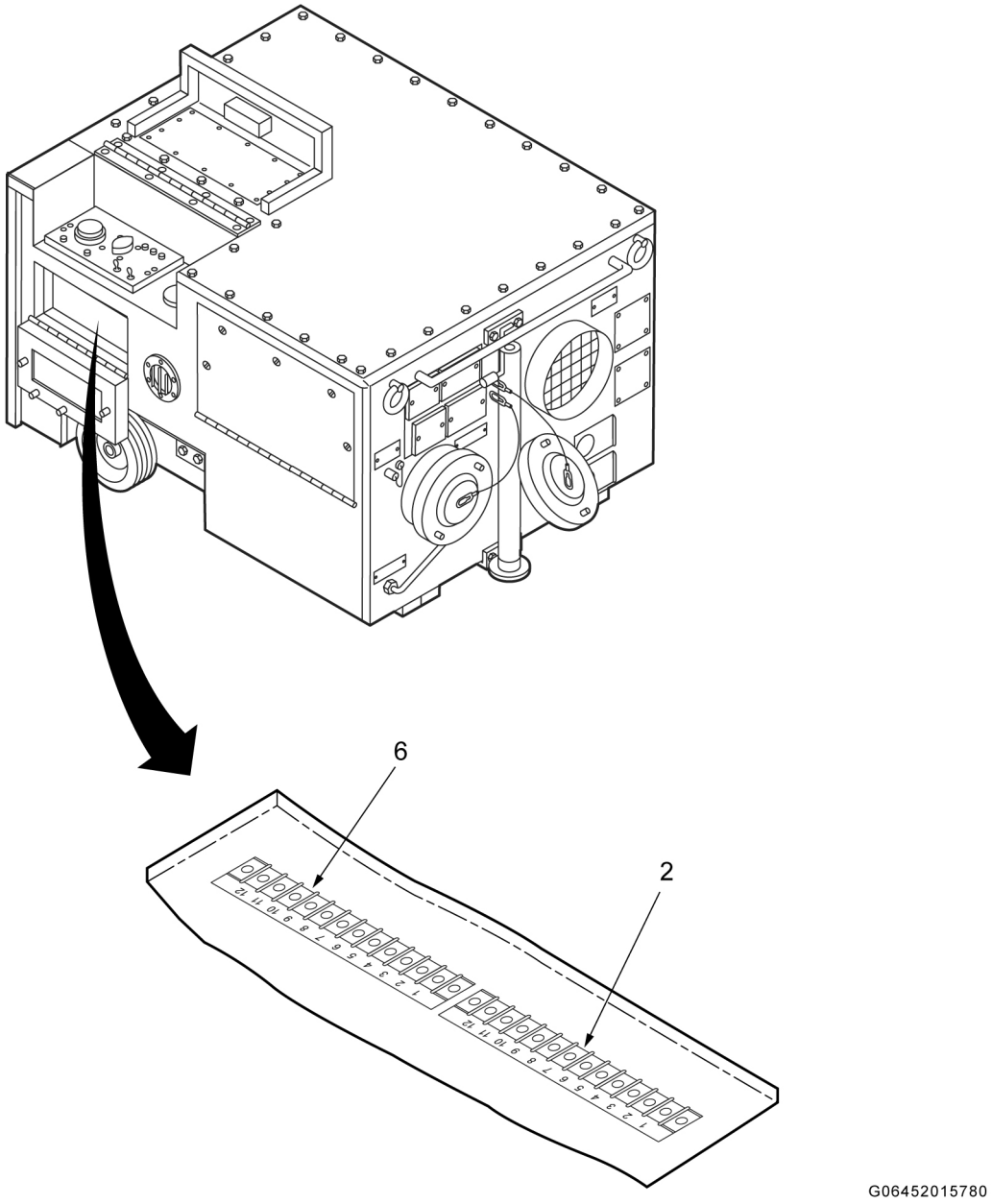


Figure 7. Control Box Panel: Terminal Boards/Transformer Assembly (Sheet 2 of 3).

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

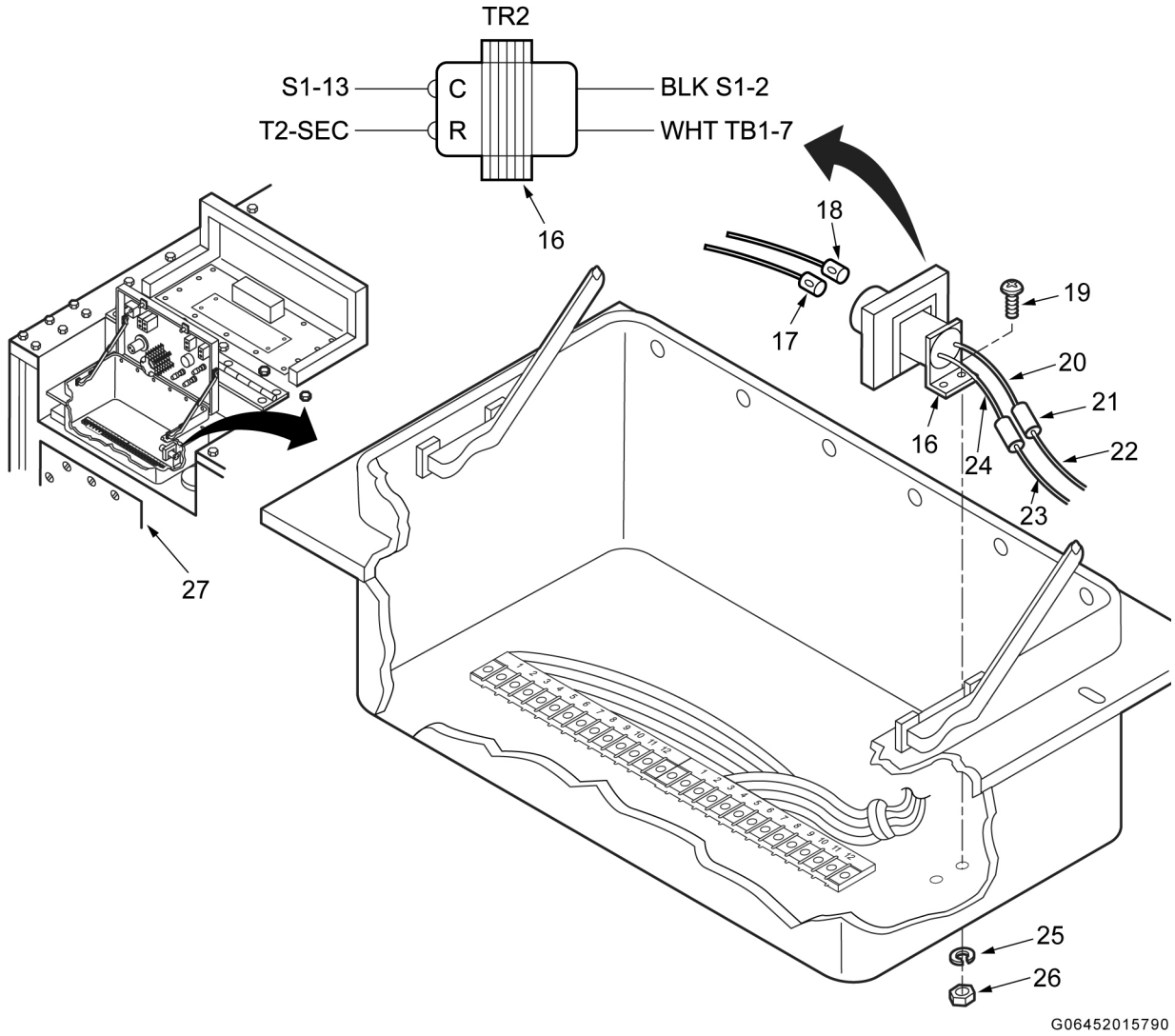


Figure 7. Control Box Panel: Terminal Boards/Transformer Assembly (Sheet 3 of 3).

6. Connect wires to bottom of TB3 (Figure 7, Item 6) as follows.
   a. Connect wire K1-W to TB3-1.
   b. Connect wire J3-A to TB3-2.
   c. Connect wire J3-B to TB3-3.
   d. Connect wires J3-C and S3-1 to TB3-4.
   e. Connect wires S3-3 and K1-B to TB3-5.
   f. Connect wires K1-F1 and D1-YEL to TB3-6.
   g. Connect wires D1-YEL and K1-F2 to TB3-7.
   h. Connect wires K1-ORG and S2-1 to TB3-8.
   i. Connect wires S2-3 and L1-BLK to TB3-9.
   j. Connect wire S2-2 to TB3-10.
   k. Connect wire K1-RED/YEL to TB3-11.
7. Connect wires to bottom of TB1 (Figure 7, Item 2) as follows.
   a. Connect wire P1-A to TB1-1.
   b. Connect wire P1-B to TB1-2.

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

c. Connect wires F1-BLK and B1-T4, T8 to TB1-3.
d. Connect wires L2-BLK and L3-NEG to TB1-4.
e. Connect wires B2-WHT and K1-WHT to TB1-5.
f. Connect wire CR1-AC to TB1-6.
g. Connect wire L1-BLK to TB1-7.
h. Connect wires F1-WHT and B1-T1, T5 to TB1-8.
i. Connect wire L2-BLK to TB1-9.
j. Connect wire S5-COMM to TB1-10.
k. Connect wires S5-N.O. and B2-BLK and K1-BLK to TB1-11.
l. Connect wire L3-POS to TB1-12.

8. Install transformer (Figure 7, Item 16), two screws (Figure 7, Item 19), two lockwashers (Figure 7, Item 25) and two nuts (Figure 7, Item 26).
9. Connect wire TR2-R/TB3-3 (Figure 7, Item 17) and TR2-C/S1-13 (Figure 7, Item 18).
10. Connect the black wire (Figure 7, Item 20) to wire S1-12 (Figure 7, Item 22) and the white wire (Figure 7, Item 24) to wire TB1-7 (Figure 7, Item 23) with two terminal splices (Figure 7, Item 21).
11. Close right side rear door (Figure 7, Item 27).

Flameout, High Temp and Power Lights Assembly

NOTE

All three lights are the same. Only the cap colors differ. Power light is green, others are red.

1. Install gasket (Figure 8, Item 7), light (Figure 8, Item 10), lockwasher (Figure 8, Item 6) and nut (Figure 8, Item 5).
2. Install bulb (Figure 8, Item 11) and cap (Figure 8, Item 12).
3. Connect wires for each light as follows:
   a. Power Light (Figure 8, Item 1) – connect wire DS1-POS (Figure 8, Item 2) and wire DS1-NEG (Figure 8, Item 3).
   b. High Temp Light (Figure 8, Item 4) – connect wire DS2-POS (Figure 8, Item 14) and wire DS2-NEG (Figure 8, Item 13).
   c. Flameout Light (Figure 8, Item 10) – connect wire DS3-POS (Figure 8, Item 8) and wire DS3-NEG (Figure 8, Item 9).

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

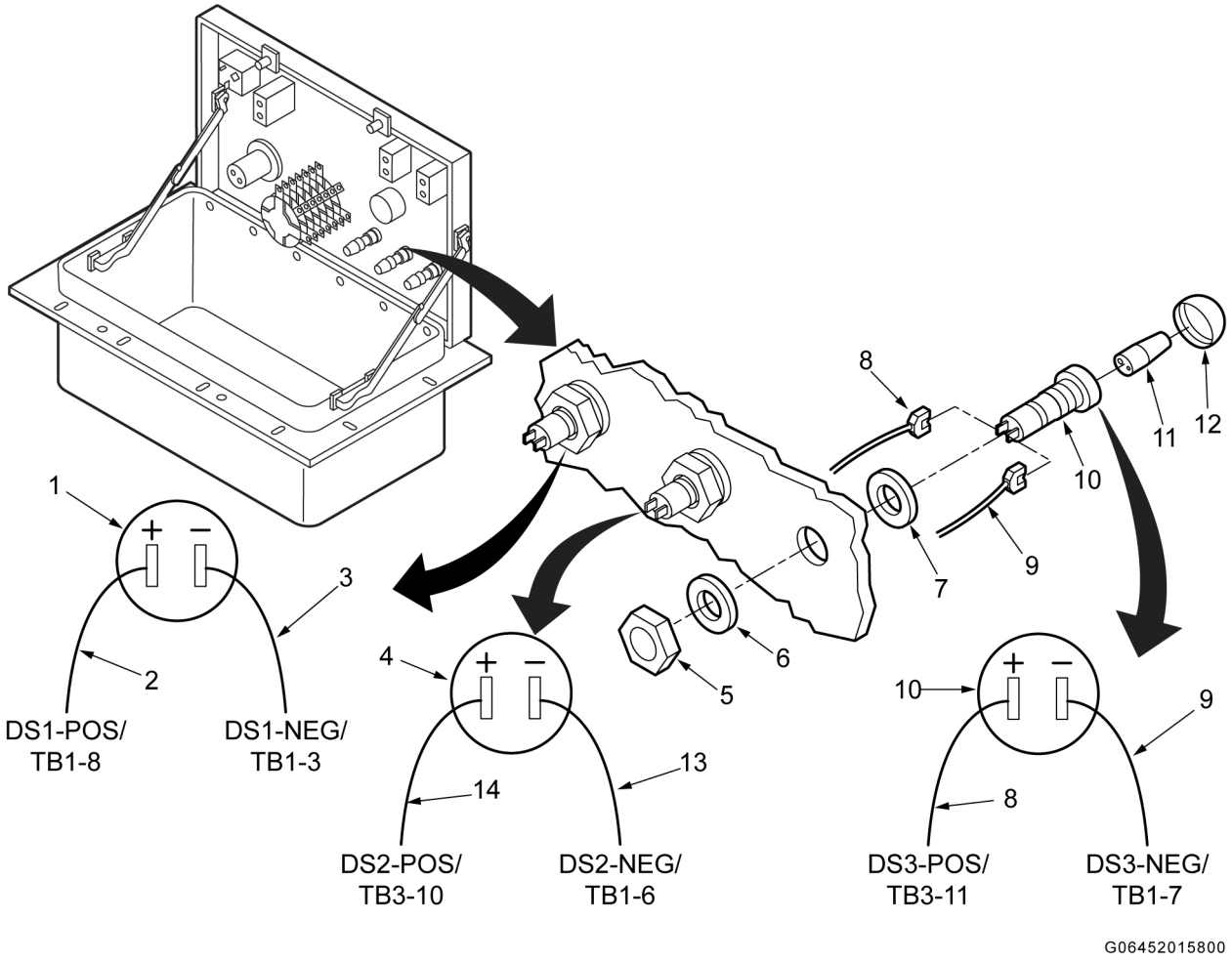


Figure 8. Control Box Panel: Power, High Temp and Flameout Lights Assembly.

Purge and Flame Reset Switches Assembly

NOTE

Both switches are the same.

1. Install nut (Figure 9, Item 2), locking ring (Figure 9, Item 3), switch (Figure 9, Item 1), O-ring (Figure 9, Item 4), lockwasher (Figure 9, Item 5) and nut (Figure 9, Item 6).
2. Install extension (Figure 9, Item 7).
3. Connect wire S4-1/TB1-9 (Figure 9, Item 11) and wire S4-2/S1-7 (Figure 9, Item 12) to Purge Switch (Figure 9, Item 1).
4. Connect wire S7-1 (Figure 9, Item 9) and wire S7-2 (Figure 9, Item 10) to Flame Reset Switch (Figure 9, Item 8).

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

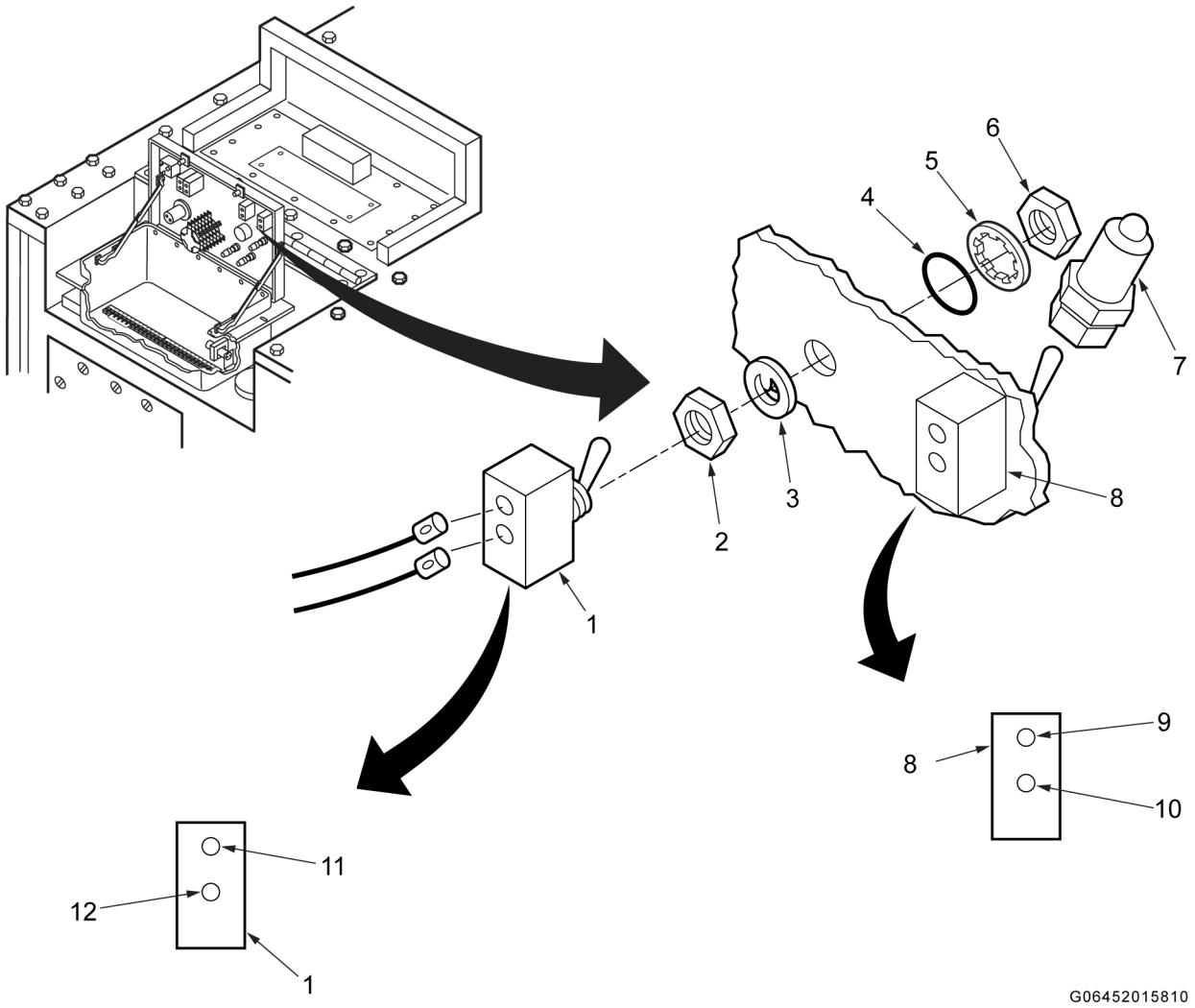


Figure 9. Control Box Panel: Purge and Flame Reset Switches Assembly.

Thermostat and Power Circuit Breakers Assembly

1. Install O-ring (Figure 10, Item 8), THERMOSTAT circuit breaker (Figure 10, Item 9), and nut (Figure 10, Item 7).
2. Connect wire CB2-1/TB3-2 (Figure 10, Item 11) and wire CB2-2/TB3-1 (Figure 10, Item 10).
3. Install O-ring (Figure 10, Item 4), POWER circuit breaker (Figure 10, Item 3), two O-rings (Figure 10, Item 5), two screws (Figure 10, Item 6), two lockwashers (Figure 10, Item 2) and two nuts (Figure 10, Item 1).
4. Connect wire CB1-1/TB1-1 (Figure 10, Item 12) and wire CB1-2/S1-5 (Figure 10, Item 13).

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

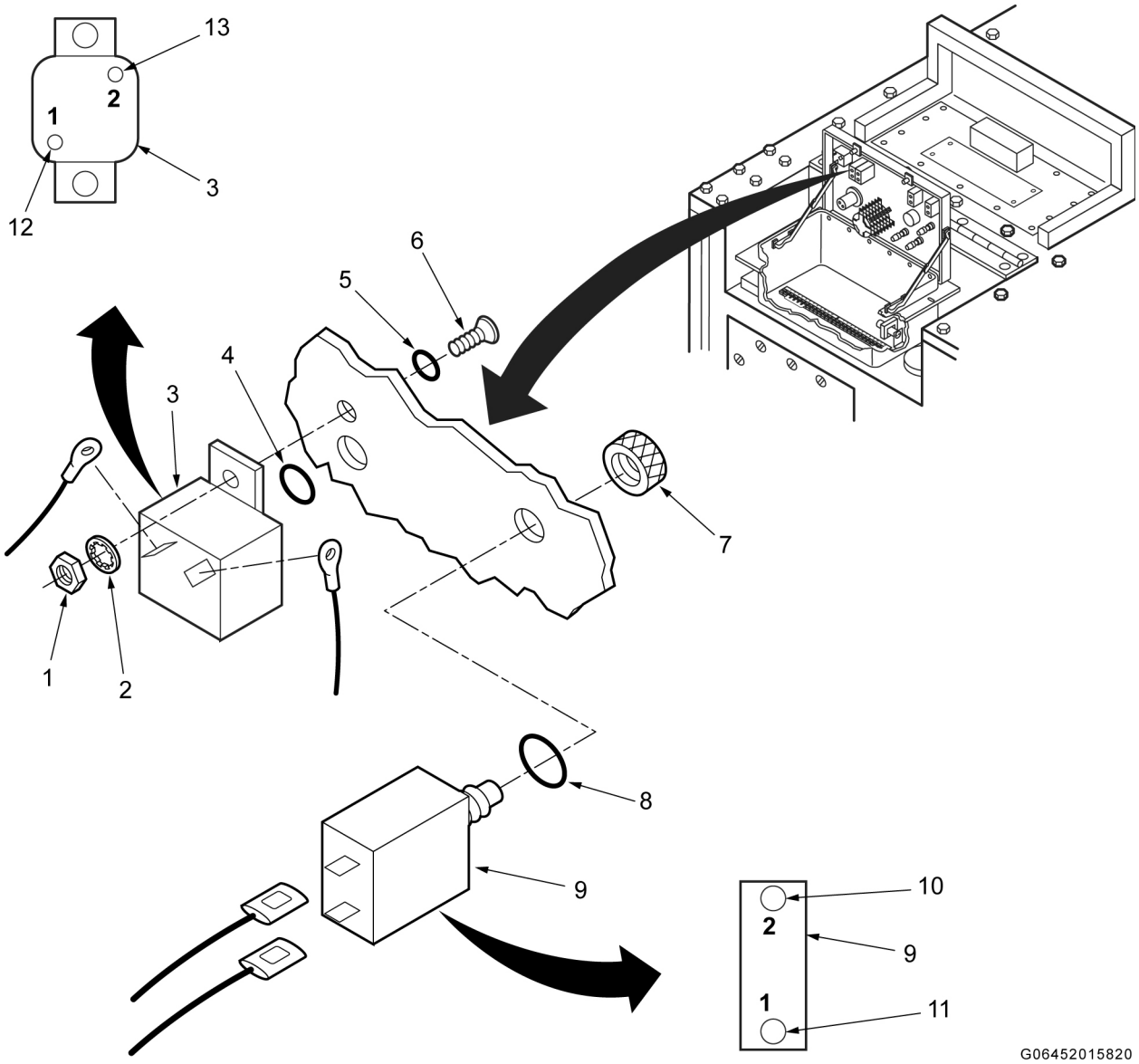


Figure 10. Control Box Panel: Thermostat and Power Circuit Breakers Assembly.

Mode Switch and Hourmeter Assembly

1. Install gasket (Figure 11, Item 3), hourmeter (Figure 11, Item 4), three screws (Figure 11, Item 5), ground wire (Figure 11, Item 2), three flat washers (Figure 11, Item 1) and three self-locking nuts (Figure 11, Item 16).
2. Connect two wires TT-NEG (Figure 11, Item 12) and TT-POS (Figure 11, Item 11).
3. Install sleeve (Figure 11, Item 13) and nut (Figure 11, Item 14).
4. Install MODE SWITCH (Figure 11, Item 15), four O-rings (Figure 11, Item 17) and four screws (Figure 11, Item 18).
5. Install pin (Figure 11, Item 10), knob (Figure 11, Item 9) and screw (Figure 11, Item 8).
6. Connect wires on MODE switch (Figure 11, Item 15) as follows.
   a. Connect wire S1-1/TB1-2 to position S1-1.
   b. Connect wires S1-2/TB1-3 and S1-2/S1-3 to position S1-2.
   c. Connect wires S1-2/S1-3 and S1-3/S1-4 to position S1-3.
   d. Connect wire S1-3/S1-4 to position S1-4.

CONTROL BOX PANEL ASSEMBLY REPLACEMENT - (CONTINUED)

e. Connect wires S1-5/CB1-2 and S1-5/S1-9 to position S1-5.
f. Connect wires S1-6/TB1-8 and S1-6/S1-7 to position S1-6.
g. Connect wires S1-6/S1-7,S1-7/S4-2, and S1-7/S1-8 to position S1-7.
h. Connect wire S1-7/S1-8 to position S1-8.
i. Connect wire S1-5/S1-9 to position S1-9.
j. Connect wires S1-11/TB1-10 and S1-11/S1-12 to position S1-11.
k. Connect wires S1-11/S1-12 and S1-12 /TR2-BLK to position S1-12.
l. Connect wires S1-13/TR2-C and S1-13/TB3-2 to position S1-13.
m. Connect wire S1-16/TB3-5 to position S1-16.

7. Close control panel (Figure 11, Item 6) and control panel cover (Figure 11, Item 7).

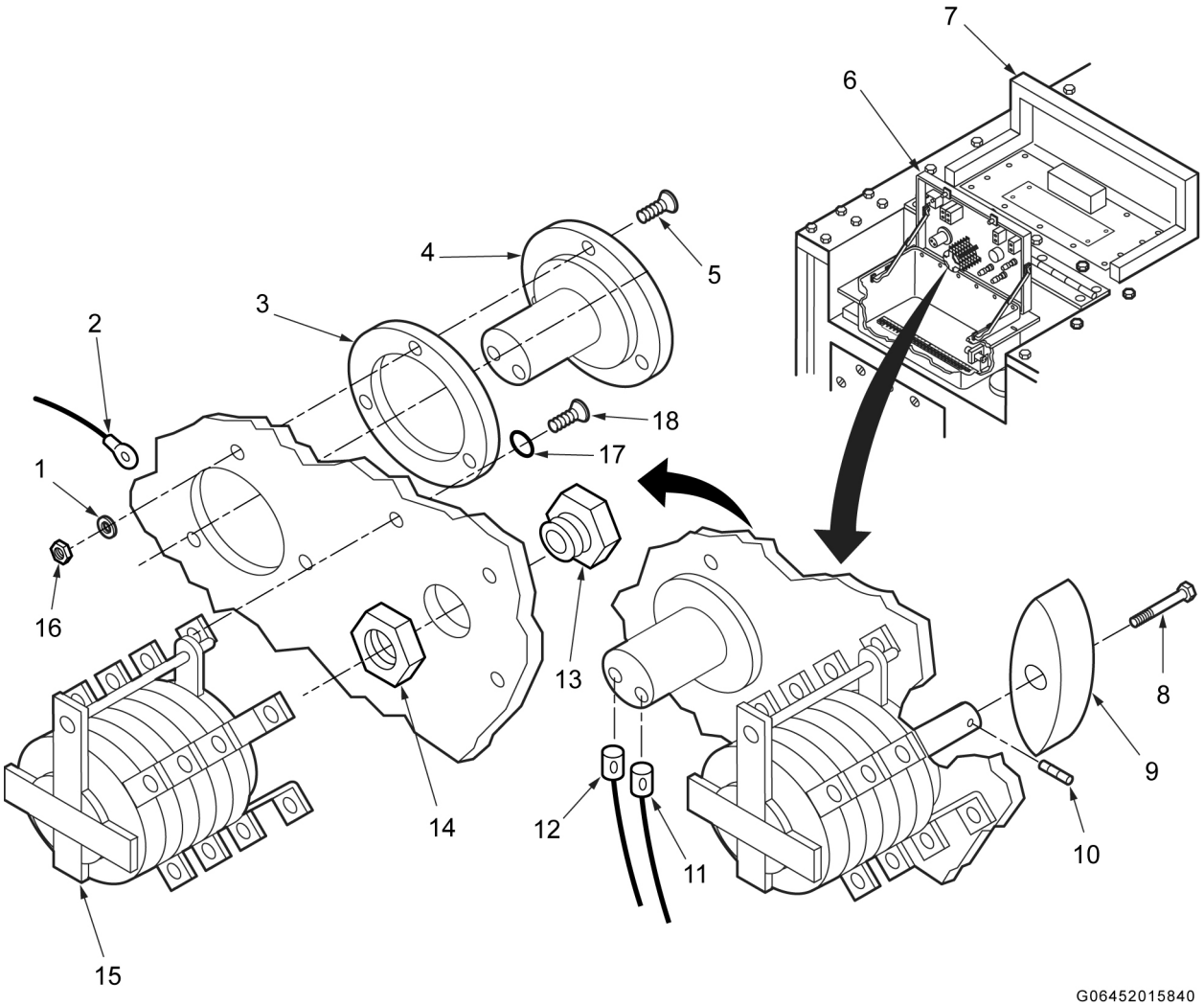


Figure 11. Control Box Panel: Hourmeter and Mode Switch Assembly.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CONTROL BOX ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Drill (Tool Set, SATS) (WP 0117, Item 4)
Bits Set (Tool Set, SATS) (WP 0117, Item 1)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gaskets (WP 0084, Figure 10, Items 1, 2, 3, and 4)
Lockwashers (WP 0118, Item 13)
Lockwashers (WP 0118, Item 17)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Control Box Panel Assembly Components removed, WP 0024

WARNING

For first aid instructions, refer to FM 4-25.11,First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

CONTROL BOX ASSEMBLY REPLACEMENT

Removal

1. Open control panel cover (Figure 1, Item 6) and right side rear door (Figure 1, Item 5).
2. Loosen two clamps (Figure 1, Item 12) and remove hose (Figure 1, Item 13) and clamps.
3. Remove screw (Figure 1, Item 1), lockwasher (Figure 1, Item 2), flat washer (Figure 1, Item 3) and bar (Figure 1, Item 4). Discard lockwasher.
4. Remove twelve screws (Figure 1, Item 7), twelve lockwashers (Figure 1, Item 8) and twelve flat washers (Figure 1, Item 9). Discard lockwashers.
5. Lift control box (Figure 1, Item 14) out from the ASH.
6. Remove two gaskets (Figure 1, Item 10) and two gaskets (Figure 1, Item 11). If necessary, retain the gaskets to serve as templates for manufacturing replacement gaskets, Otherwise, discard gaskets.

Installation

1. Install two gaskets (Figure 1, Item 10) and two gaskets (Figure 1, Item 11).
2. Insert control box assembly (Figure 1, Item 14) into control compartment.
3. Install twelve flat washers (Figure 1, Item 9), twelve lockwashers (Figure 1, Item 8) and twelve screws (Figure 1, Item 7).
4. Install flat washer (Figure 1, Item 3), lockwasher (Figure 1, Item 2), screw (Figure 1, Item 1) and bar (Figure 1, Item 4).

CONTROL BOX ASSEMBLY REPLACEMENT - (CONTINUED)

NOTE

Drain tube must be routed under the air inlet of the combustion air fan assembly.

5. Install drain tube (Figure 1, Item 13) and secure with two clamps (Figure 1, Item 12).
6. Close control panel cover (Figure 1, Item 6) and door (Figure 1, Item 5).

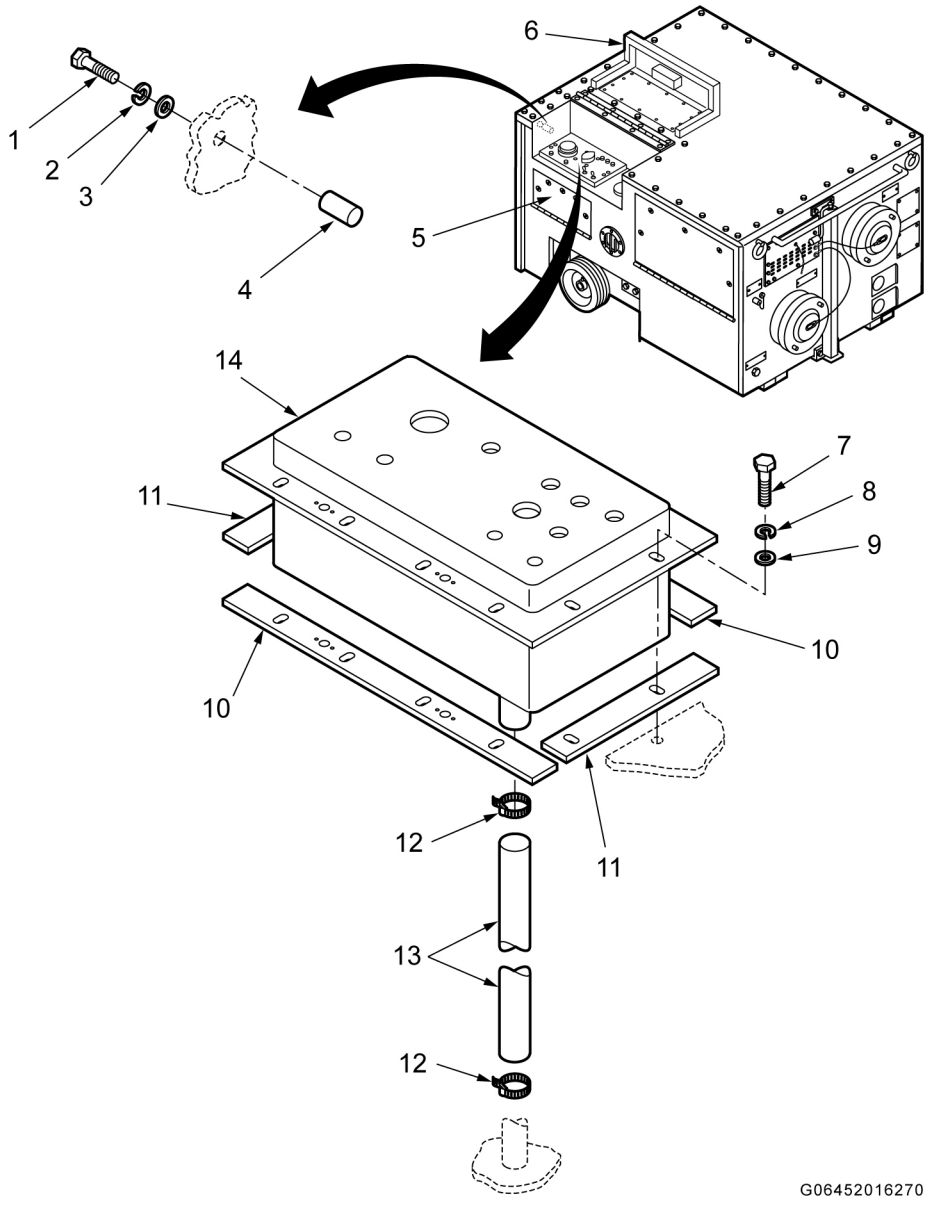


Figure 1. Control Box Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL PRESSURE GAUGE REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwashers (WP 0096, Figure 14, Item 4)
Pressure Gauge (WP 0096, Figure 14, Item 11)
Tube Assembly (WP 0090, Figure 5)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1

Equipment Condition
ASH disconnected from power source

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

FUEL PRESSURE GAUGE REPLACEMENT

Removal

1. Open control panel cover (Figure 1, Item 2).
2. Open front side door (Figure 1, Item 3).
3. Disconnect metal-tube fuel line (Figure 1, Item 4).
4. Remove two nuts (Figure 1, Item 5), two lockwashers (Figure 1, Item 6), bracket (Figure 1, Item 7), and gauge (Figure 1, Item 1). Discard lockwashers.

Installation

NOTE

Ensure that gauge face is right-side-up when standing in front of control box.

1. Install fuel gauge (Figure 1, Item 1), bracket (Figure 1, Item 7), two lockwashers (Figure 1, Item 6), and two nuts (Figure 1, Item 5).
2. Install metal-tube fuel line (Figure 1, Item 4) (Manufacture according to , Figure 2).
3. Close front side door (Figure 1, Item 3).

FUEL PRESSURE GAUGE REPLACEMENT - (CONTINUED)

4. Close control panel cover (Figure 1, Item 2).

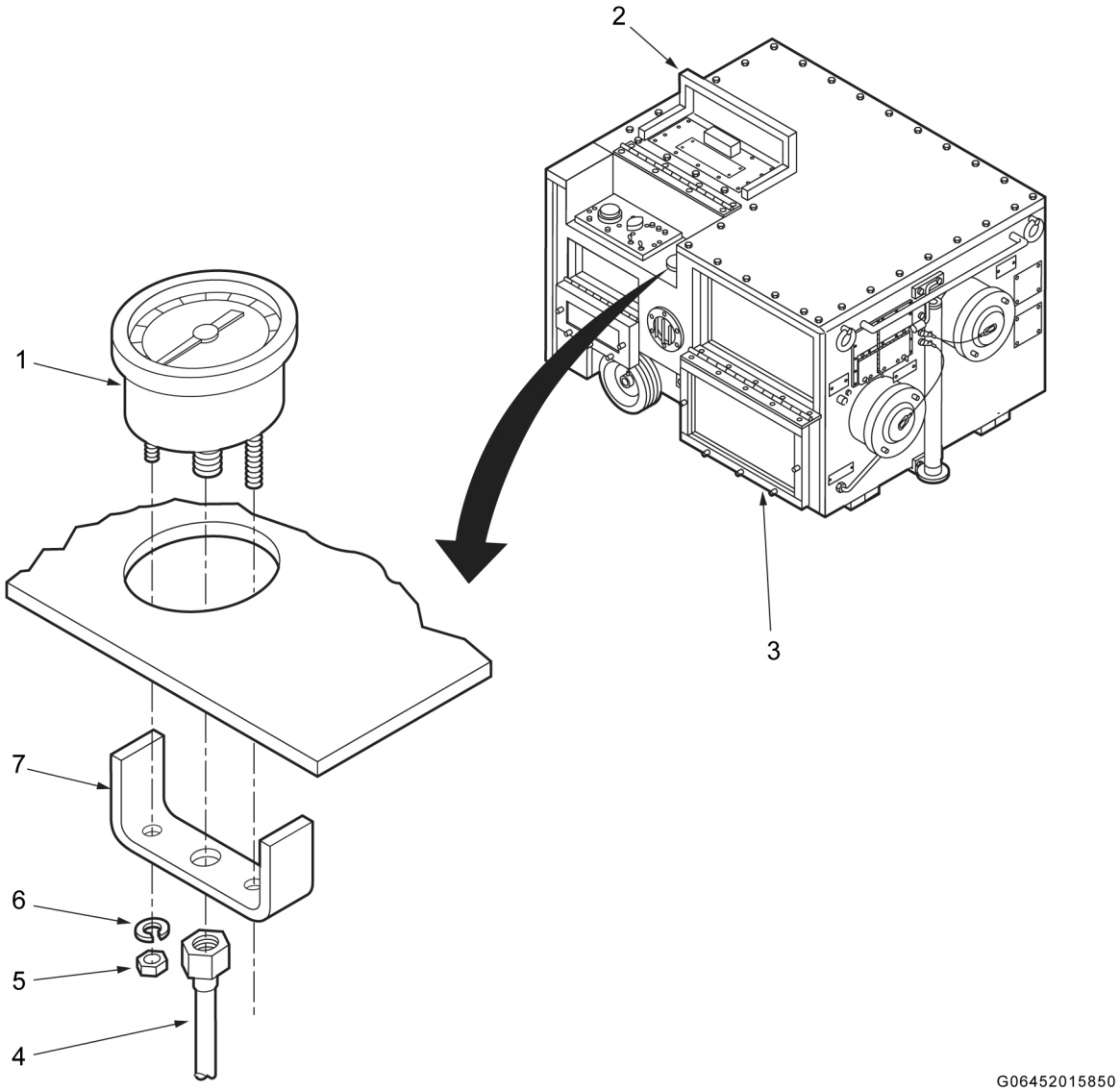


Figure 1. Fuel Pressure Gauge Replacement.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

COMBUSTOR CONTROL RELAY ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Offset Phillips Screwdriver (Tool Set, SATS) (WP 0113, Item 9)
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Combustor Control Relay Assembly (WP 0096, Figure 15, Item 9)
Lockwasher (WP 0096, Figure 15, Item 3)
Rags, Wiping (WP 0116, Item 11)
Tags, Marker (WP 0116, Item 15)
Terminal Splice (WP 0118, Item 45)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

COMBUSTOR CONTROL RELAY ASSEMBLY REPLACEMENT

Removal

1. Open the rear side access door (Figure 1, Item 1).
2. Tag and separate four wires (Figure 1, Item 9) at terminal splice (Figure 1, Item 8). Discard splices.
3. Remove screw (Figure 1, Item 3), flat washer (Figure 1, Item 4), nut (Figure 1, Item 7), lockwasher (Figure 1, Item 6) and clamp (Figure 1, Item 5). Discard lockwasher.
4. Tag and disconnect wires (Figure 1, Item 11) and (Figure 1, Item 10) from solenoid on the assembly (Figure 1, Item 2).
5. Loosen screw (Figure 1, Item 16) and remove cover (Figure 1, Item 12).
6. Tag and disconnect four wires (Figure 1, Item 17) by removing four screws (Figure 1, Item 18).
7. Remove four screws (Figure 1, Item 13), four lockwashers (Figure 1, Item 14) and combustor control relay assembly (Figure 1, Item 15). Discard lockwashers.

COMBUSTOR CONTROL RELAY ASSEMBLY REPLACEMENT - (CONTINUED)

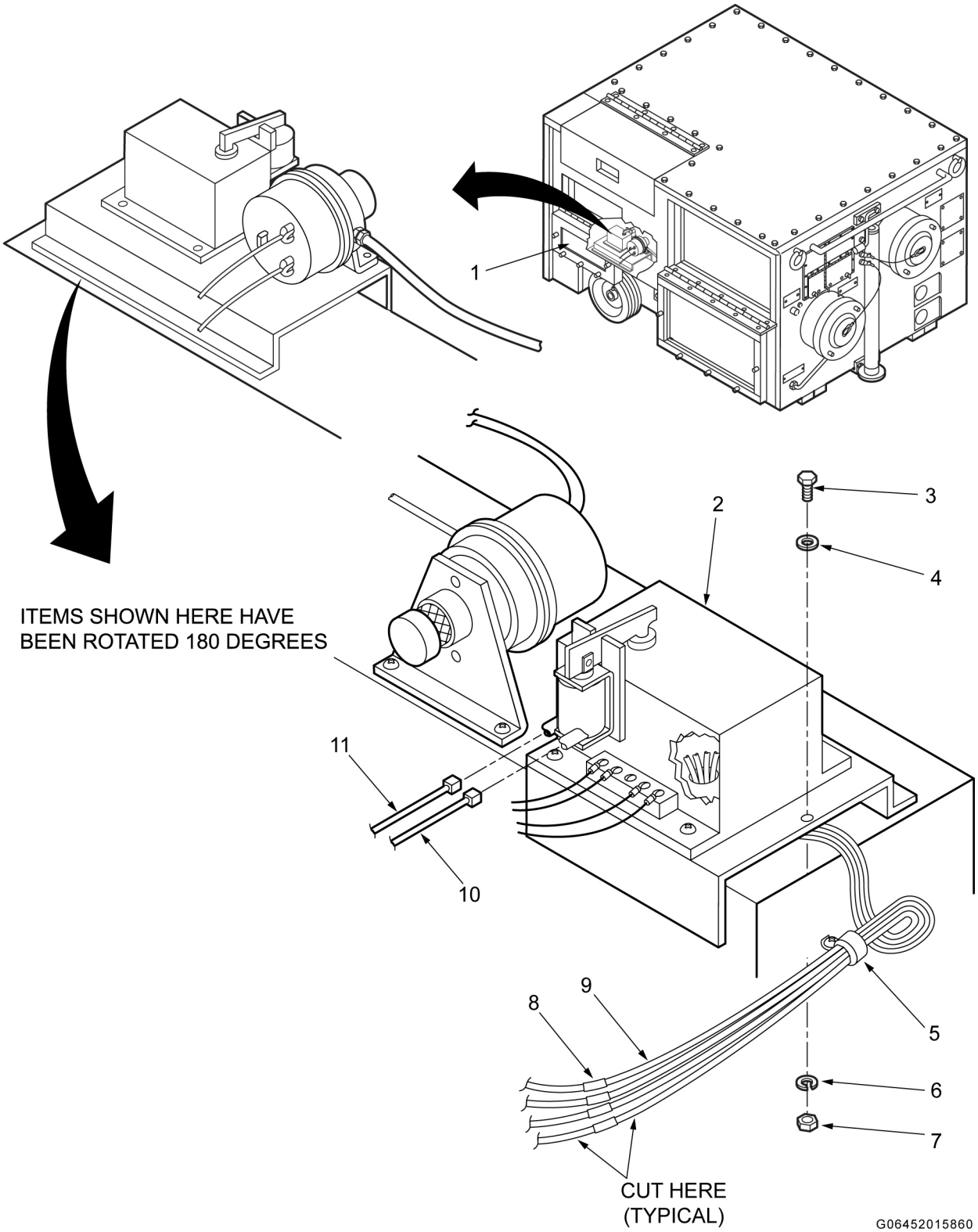


Figure 1. Combustor Control Relay Removal (Sheet 1 of 2).

COMBUSTOR CONTROL RELAY ASSEMBLY REPLACEMENT - (CONTINUED)

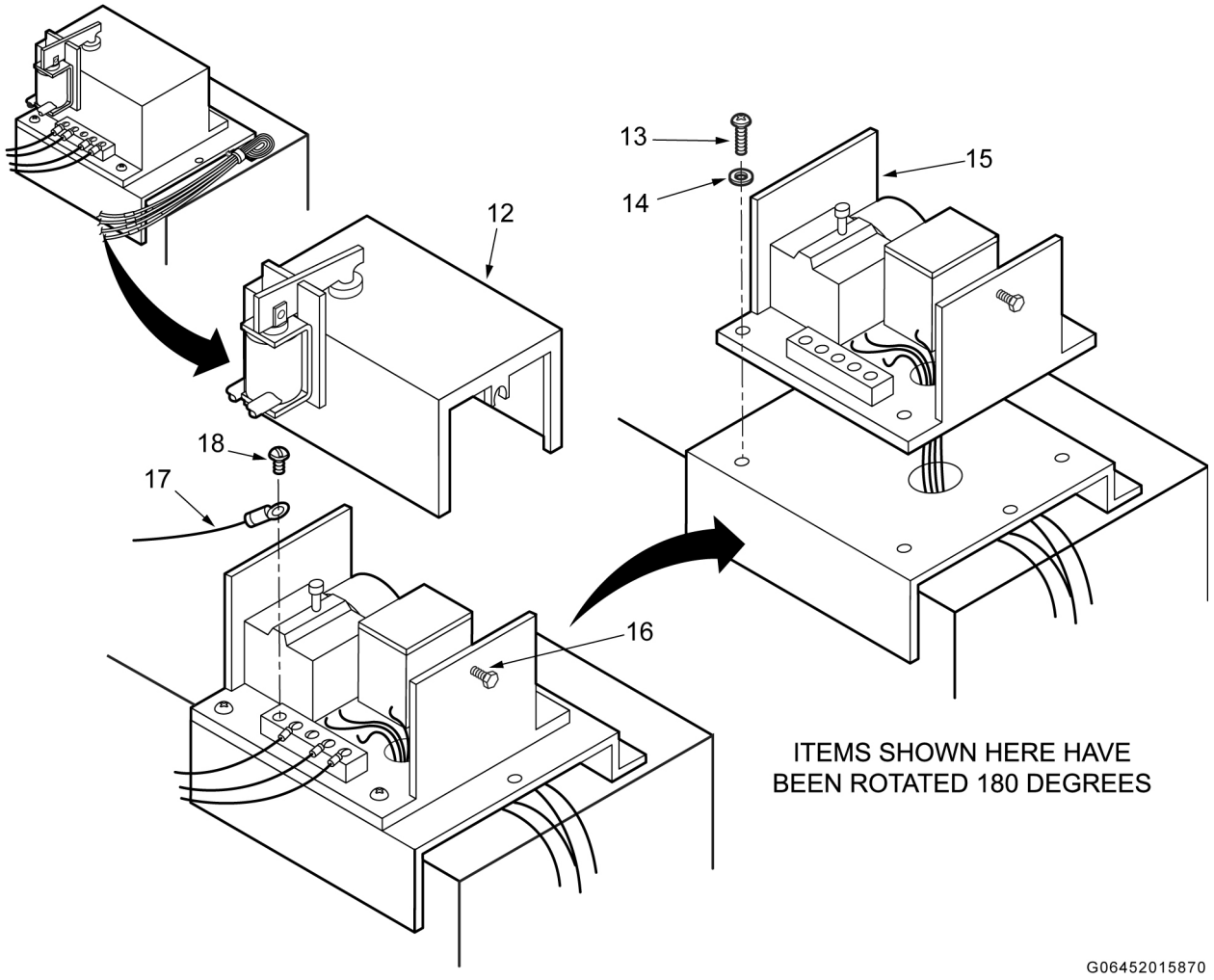


Figure 1. Combustor Control Relay Removal (Sheet 2 of 2).

Installation

1. Install combustor control relay assembly (Figure 2, Item 4) while guiding the four colored wires through the hole in the mounting bracket (Figure 2, Item 5) with the wires extending out toward the rear of the ASH.
2. Install four lockwashers (Figure 2, Item 2) and four screws (Figure 2, Item 3).
3. Install wires with four screws (Figure 2, Item 11) as follows:
   a. Wire (Figure 2, Item 10) TB3-1/K1-W to position W.
   b. Wire (Figure 2, Item 9) TB3-5/ K1-B to position B.
   c. Wire (Figure 2, Item 7) TB3-6/K1-F1 to position F1.
   d. Wire (Figure 2, Item 8) TB3-7/K1-F2 to position F2.
4. Install cover (Figure 2, Item 1) on combustor control relay assembly (Figure 2, Item 4) and tighten screw (Figure 2, Item 6).
5. Install wires (Figure 2, Item 20) and (Figure 2, Item 21) on the assembly's solenoid.
6. Pass the four colored wires (Figure 2, Item 16), (Figure 2, Item 15), (Figure 2, Item 19), and (Figure 2, Item 18) through clamp (Figure 2, Item 14).

COMBUSTOR CONTROL RELAY ASSEMBLY REPLACEMENT - (CONTINUED)

7. Connect the wires using four crimp splices (Figure 2, Item 17) as follows:
   a. Black wire (Figure 2, Item 18) connects to wire coming from TB1-11.
   b. White wire (Figure 2, Item 19) connects to wire coming from TB1-5.
   c. Orange wire (Figure 2, Item 15) connects to wire coming from TB3-8.
   d. Red/Yellow wire (Figure 2, Item 16) connects to wire coming form TB3-11.
8. Install wire clamp (Figure 2, Item 14) and screw (Figure 2, Item 13).
9. Close door (Figure 2, Item 12).

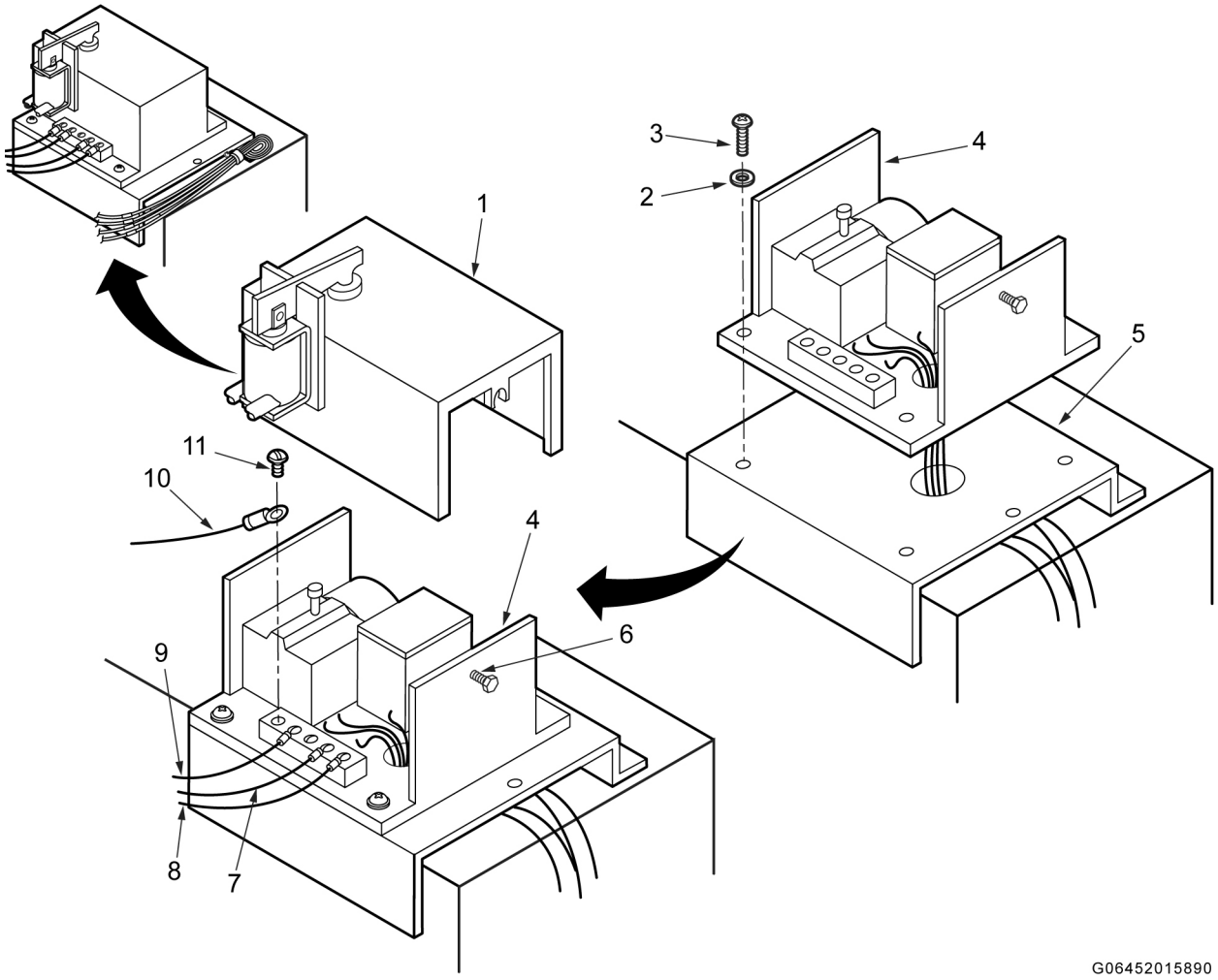


Figure 2. Combustor Control Relay Installation (Sheet 1 of 2).

COMBUSTOR CONTROL RELAY ASSEMBLY REPLACEMENT - (CONTINUED)

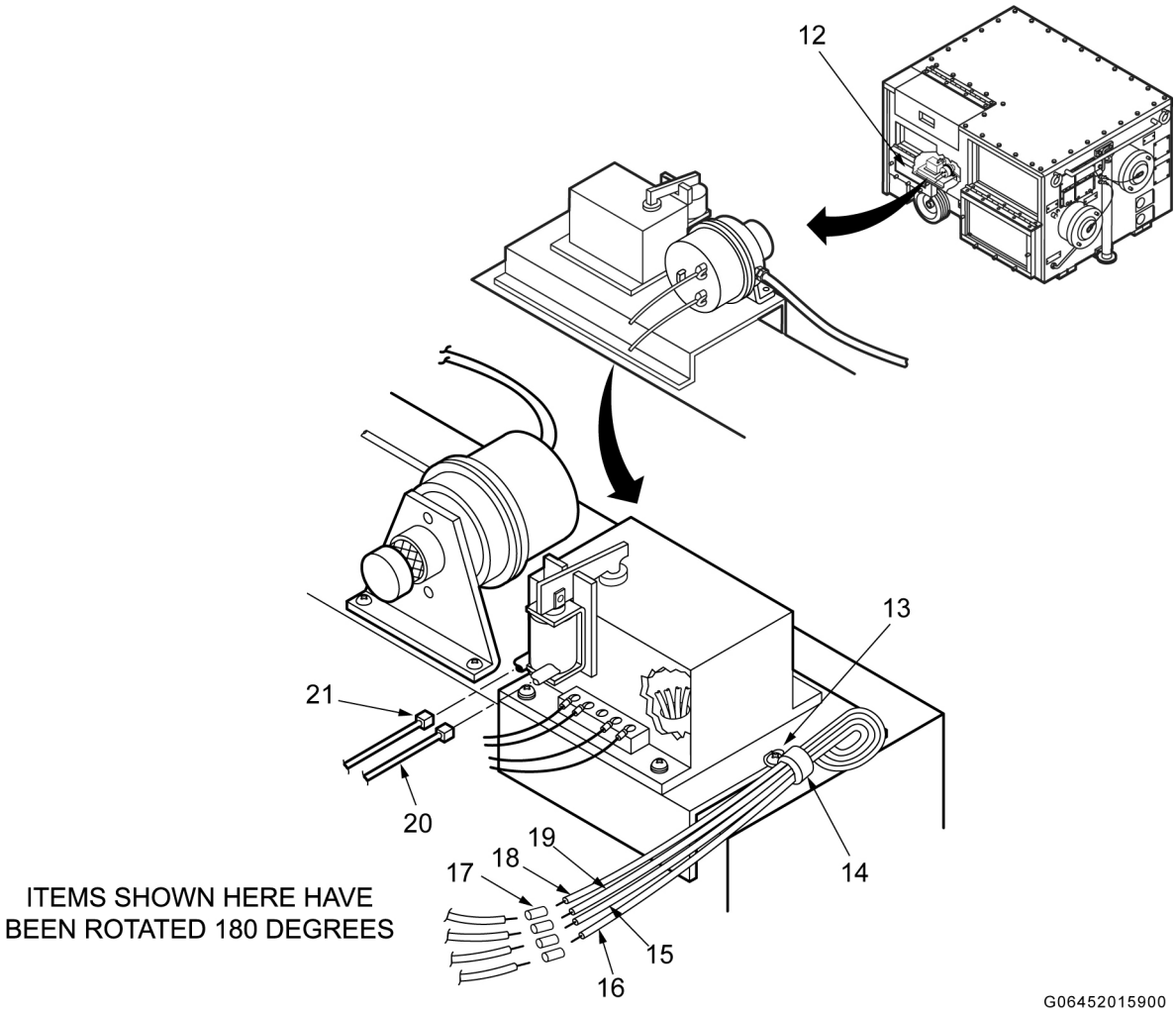


Figure 2. Combustor Control Relay Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

AIR PRESSURE SWITCH REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwashers (WP 0096, Figure 15, Item 3)
Pressure Switch, Air (WP 0096, Figure 15, Item 7)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

AIR PRESSURE SWITCH REPLACEMENT

Removal

1. Open rear side door (Figure 1, Item 1) and front side door (Figure 1, Item 2).
2. Tag and disconnect wires (Figure 1, Item 7) and (Figure 1, Item 8) from air switch (Figure 1, Item 6).
3. Remove air line (Figure 1, Item 4), and fittings (Figure 1, Item 3) and (Figure 1, Item 5).
4. Remove two screws (Figure 1, Item 10), two lockwashers (Figure 1, Item 9), and air switch (Figure 1, Item 6). Discard lockwashers.

Installation

1. Install air switch (Figure 1, Item 6), two lockwashers (Figure 1, Item 9) and two screws (Figure 1, Item 10).
2. Install fittings (Figure 1, Item 3) and (Figure 1, Item 5), and air line (Figure 1, Item 4).
3. Connect wires (Figure 1, Item 7) and (Figure 1, Item 8) as follows:
   a. Connect wire TB1-11/S5-NO to the top (normally open) post.
   b. Connect wire TB1-10/S5-COM to the bottom (common) post.
4. Close doors (Figure 1, Item 2) and (Figure 1, Item 1).

AIR PRESSURE SWITCH REPLACEMENT - (CONTINUED)

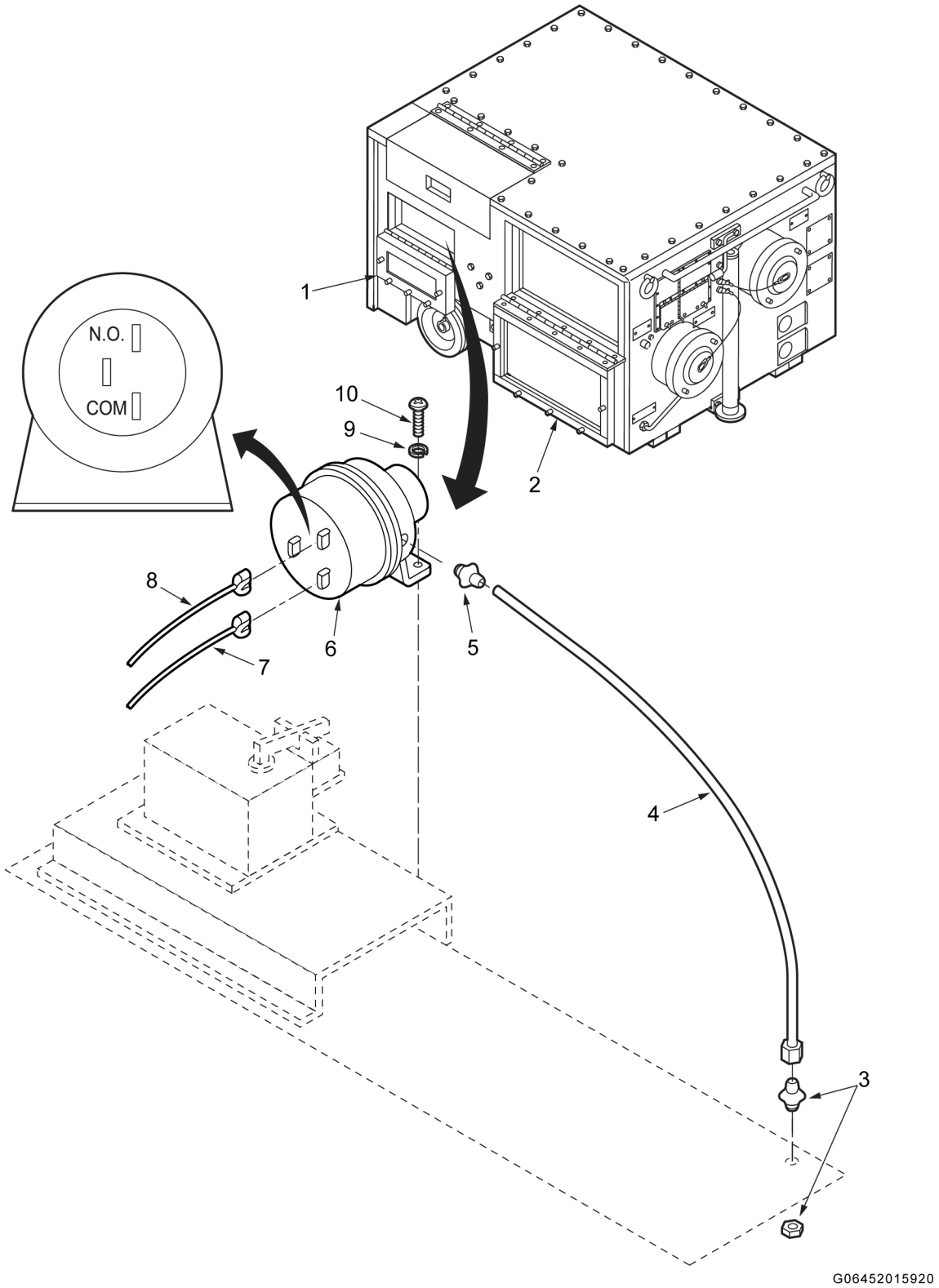


Figure 1. Air Pressure Switch Removal/Installation.

AIR PRESSURE SWITCH REPLACEMENT - (CONTINUED)

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

EXTERNAL FUEL CONNECTION AND HOSE REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)
Tool Set, SATS (WP 0117, Item 8)

Materials/Parts
External Fuel Hose Assembly (WP 0097, Figure 16, Item 1)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1

Equipment Condition
ASH disconnected from power source

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

EXTERNAL FUEL CONNECTION AND HOSE REPLACEMENT

Removal

1. External Fuel Hose
   a. Detach the external fuel supply hose from the ASH by pulling back on the ring on the half quick-disconnect coupling (Figure 1, Item 6) at the straight pipe-to-tube adapter (Figure 1, Item 7) marked EXTERNAL FUEL SUPPLY.
   b. If necessary, detach the opposite end of the hose from its external tank straight pipe-to-tube adapter (Figure 1, Item 2) as in Step a. Replace with new hose assembly.
2. External Fuel Connection
   a. Open the rear side door to access fuel lines and ASH rear panel (Figure 2, Item 1).
   b. Disconnect the U-shaped metal-tube fuel line (Figure 2, Item 2) from the straight pipe-to-tube adapter (Figure 2, Item 5).
   c. Loosen the U-shaped metal-tube fuel line at its connection to the fuel selector valve (Figure 2, Item 3).
   d. Remove retaining nut (Figure 2, Item 4) and detach straight pipe-to-tube adapter (Figure 2, Item 5) from rear panel.

EXTERNAL FUEL CONNECTION AND HOSE REPLACEMENT - (CONTINUED)

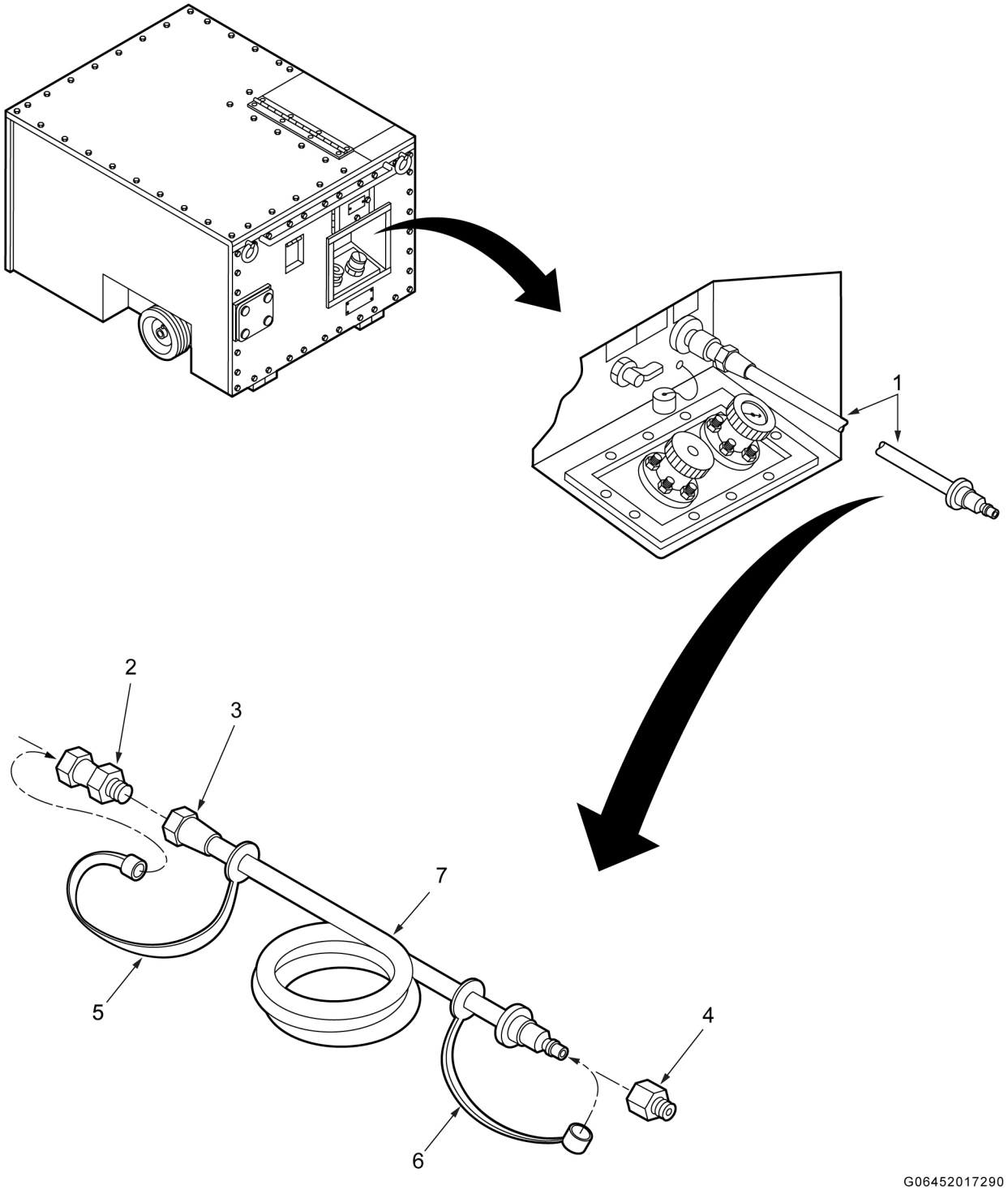


Figure 1. External Fuel Hose Removal/Installation

EXTERNAL FUEL CONNECTION AND HOSE REPLACEMENT - (CONTINUED)

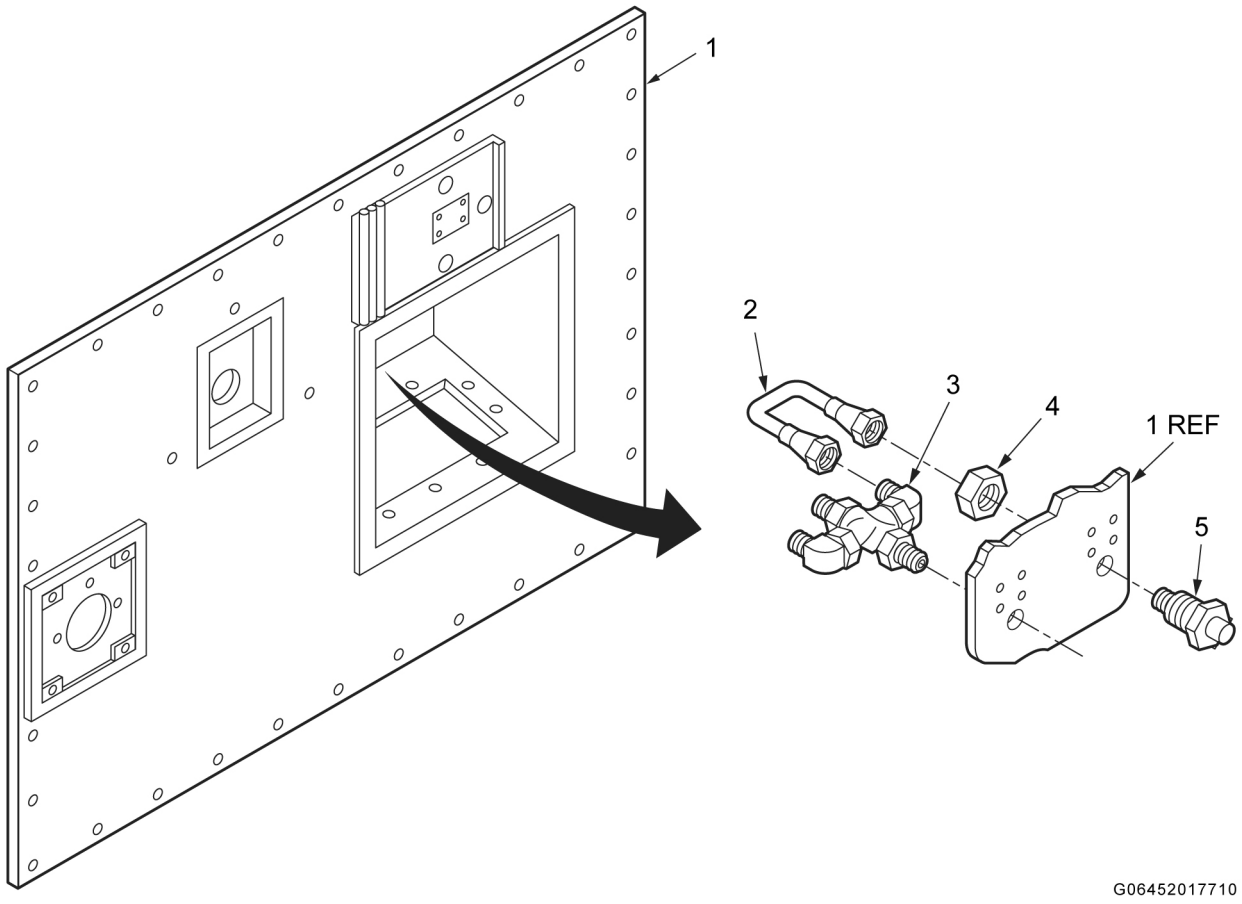


Figure 2. External Fuel Adapter Removal/Installation.

Installation

1. External Fuel Connection
   a. Open the rear side door to access fuel lines and ASH rear panel (Figure 2, Item 1).
   b. Insert the threaded end of the straight pipe-to-tube adapter (Figure 2, Item 5) into the opening on the rear panel marked “EXTERNAL FUEL SUPPLY.”
   c. Install retaining nut (Figure 2, Item 4) and onto the straight pipe-to-tube adapter. Tighten.
   d. Connect the U-shaped metal-tube fuel line (Figure 2, Item 2) to the straight pipe-to-tube adapter (Figure 2, Item 5). Tighten the connection.
   e. Tighten the U-shaped metal-tube fuel line at its connection to the fuel selector valve (Figure 2, Item 3).
   f. Close the rear side door.
2. External Fuel Hose
   a. Connect the half quick-disconnect coupling (Figure 1, Item 6) to the external fuel coupling adapter by pulling back on the spring-loaded ring, pushing the couplings together, and releasing the ring.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL LINE ASSEMBLIES REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)
Tool Set, SATS (WP 0117, Item 8)

Materials/Parts
Fuel Line Assembly (WP 0090, Figure 1)
Fuel Line Assembly (WP 0090, Figure 2)
Fuel Line Assembly (WP 0090, Figure 3)
Fuel Line Assembly (WP 0090, Figure 4)
Fuel Line Assembly (WP 0090, Figure 5)
Fuel Line Assembly (WP 0090, Figure 6)
Fuel Line Assembly (WP 0090, Figure 7)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1

Equipment Condition
ASH disconnected from power source
ASH top panel removed, WP 0019

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

FUEL LINE ASSEMBLIES REPLACEMENT

Disassemble only to the level required to make repairs.

Repair is limited to replacement of defective parts.

Compare fuel line assemblies with WP 0097, Figure 17 to ensure proper manufacture.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL TANK ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Drain Pan (Tool Set, SATS) (WP 0117, Item 3)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Fuel Pan Assembly (WP 0097, Figure 18, Item 9)
Fuel Tank (WP 0097, Figure 18, Item 4)
Gasket (WP 0084, Figure 6)
Lockwasher (WP 0097, Figure 18, Item 2)
Lockwasher (WP 0097, Figure 19, Item 2)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1

Equipment Condition
ASH disconnected from power source
Rear panel removed, WP 0020

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

WARNING

Use care when using the jack assembly or when raising or lowering the wheel assemblies. Fingers or hands may be pinched causing injury to personnel.

FUEL TANK ASSEMBLY REPLACEMENT

Removal

1. Extend jack assembly (Figure 1, Item 4), and then on each side of the ASH remove the pin (Figure 1, Item 2) and place each wheel assembly (Figure 1, Item 1) in the down position. Reinsert the pins (Figure 1, Item 2) to lock the wheels in place.
2. Retract jack assembly (Figure 1, Item 4) until front of ASH (Figure 1, Item 3) is resting on the ground.

FUEL TANK ASSEMBLY REPLACEMENT - (CONTINUED)

3. Remove four screws (Figure 1, Item 8) four lockwashers (Figure 1, Item 7), four flat washers (Figure 1, Item 9), fuel-drain cover (Figure 1, Item 6), and gasket (Figure 1, Item 5). Discard lockwashers and gasket.

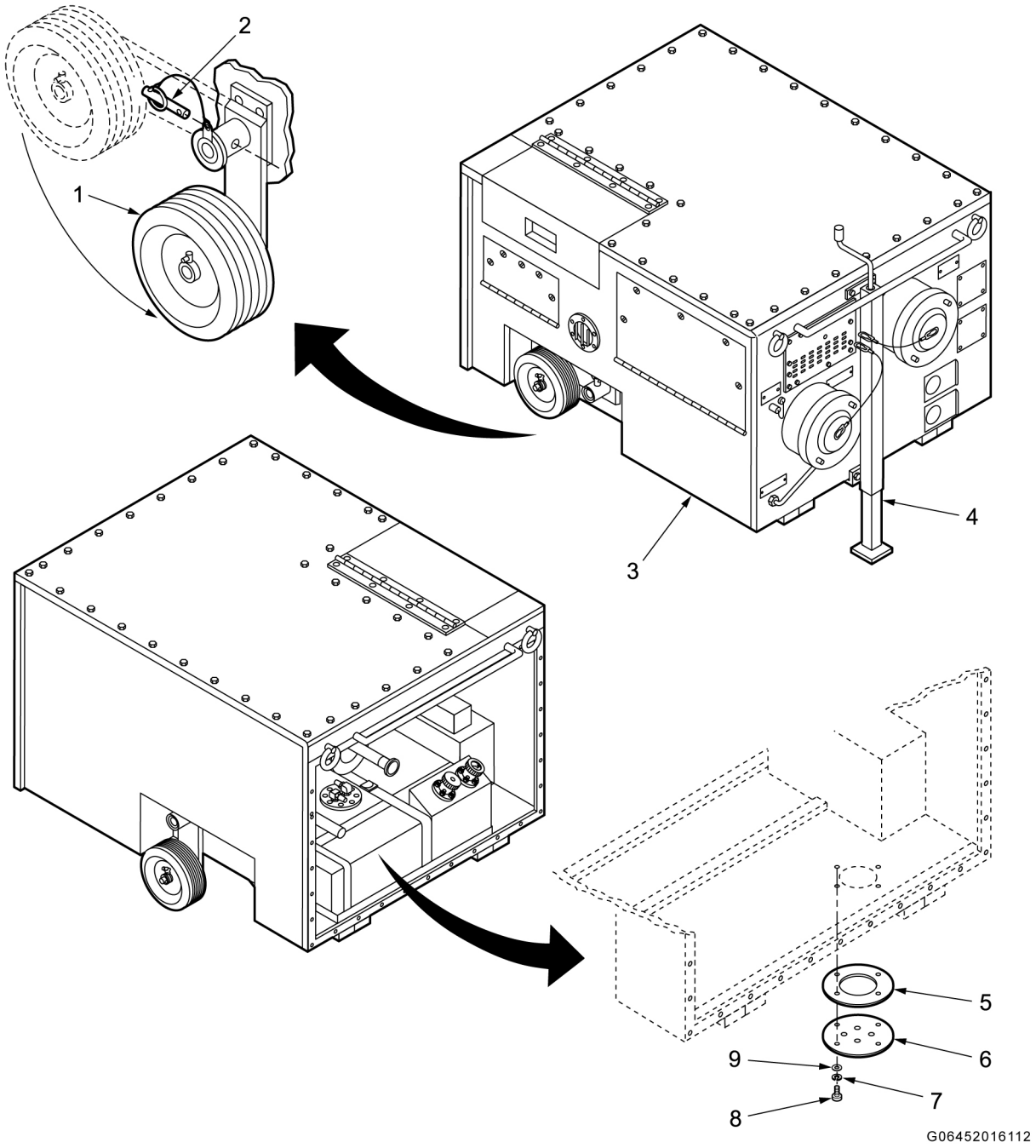


Figure 1. Fuel Drain Cover Removal.

NOTE

The ASH fuel tank may hold 14 gallons. Drain pan may need to be emptied repeatedly to empty the tank completely.

4. Position a drain pan (Figure 2, Item 7) under fuel tank (Figure 2, Item 2).

FUEL TANK ASSEMBLY REPLACEMENT - (CONTINUED)

5. Remove drain plug (Figure 2, Item 6).
6. Extend the jack assembly (Figure 2, Item 1) while emptying the tank (Figure 2, Item 2). Do this in slow stages, stopping frequently to make sure that the drain pan will not overflow before extending the jack further. Be careful not to spill fuel.
7. When tank (Figure 2, Item 2) is level and empty, reinstall the drain plug (Figure 2, Item 6).
8. Remove fuel lines (Figure 2, Item 3) and (Figure 2, Item 4) from the fuel tank (Figure 2, Item 2).
9. Unfasten the four straps (Figure 2, Item 8) that hold the tank assembly in place.
10. Lift the portable fuel tank (Figure 2, Item 2) from tray (Figure 2, Item 5).
11. Remove eight screws (Figure 2, Item 11), eight lockwashers (Figure 2, Item 10), eight flat washers (Figure 2, Item 9), and fuel pan assembly(Figure 2, Item 5). Discard lockwashers.

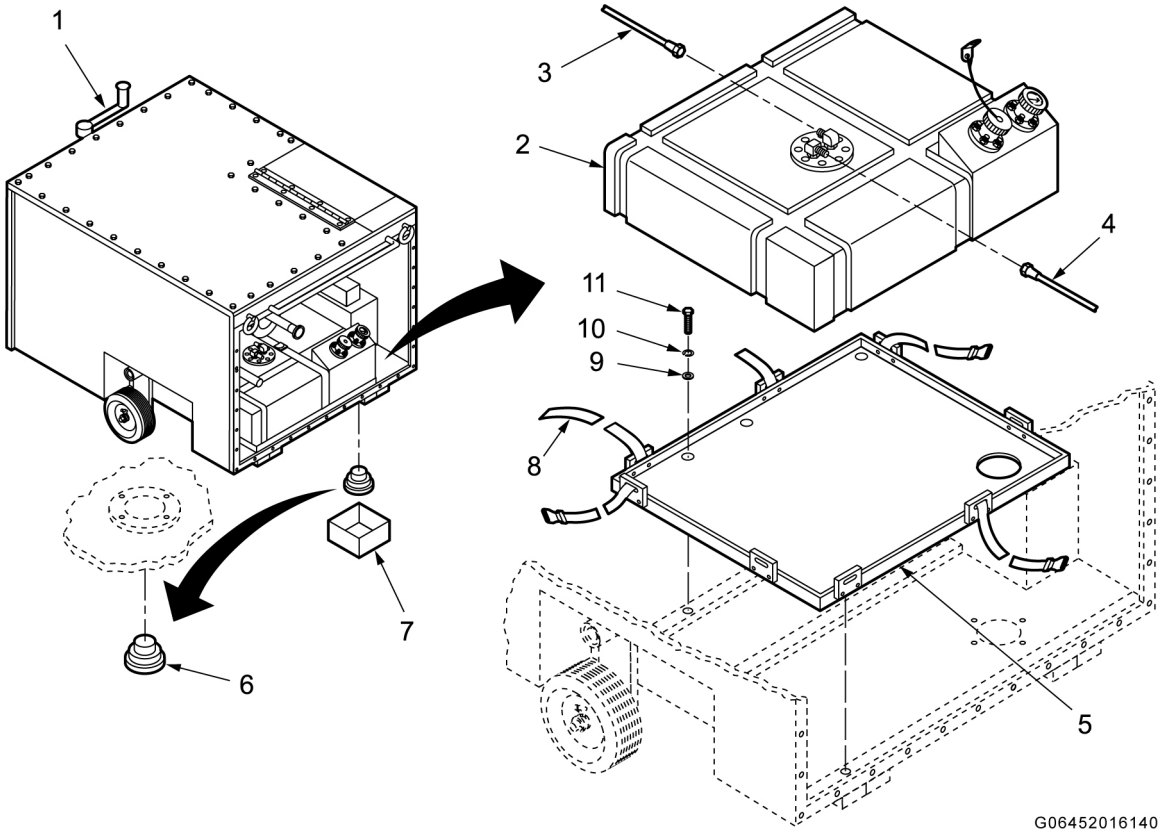


Figure 2. Fuel Tank Removal.

Installation

1. Install tray (Figure 3, Item 4) eight flat washers (Figure 3, Item 10), eight lockwashers (Figure 3, Item 11) and eight screws (Figure 3, Item 12).
2. Install fuel tank (Figure 3, Item 13) on tray (Figure 3, Item 4) and fasten the four straps (Figure 3, Item 3).
3. Connect fuel lines (Figure 3, Item 1) and (Figure 3, Item 2) to fuel tank (Figure 3, Item 13).
4. Install gasket (Figure 3, Item 5), fuel drain cover (Figure 3, Item 6), four flat washers (Figure 3, Item 9), four lockwashers (Figure 3, Item 7) and four screws (Figure 3, Item 8).

FUEL TANK ASSEMBLY REPLACEMENT - (CONTINUED)

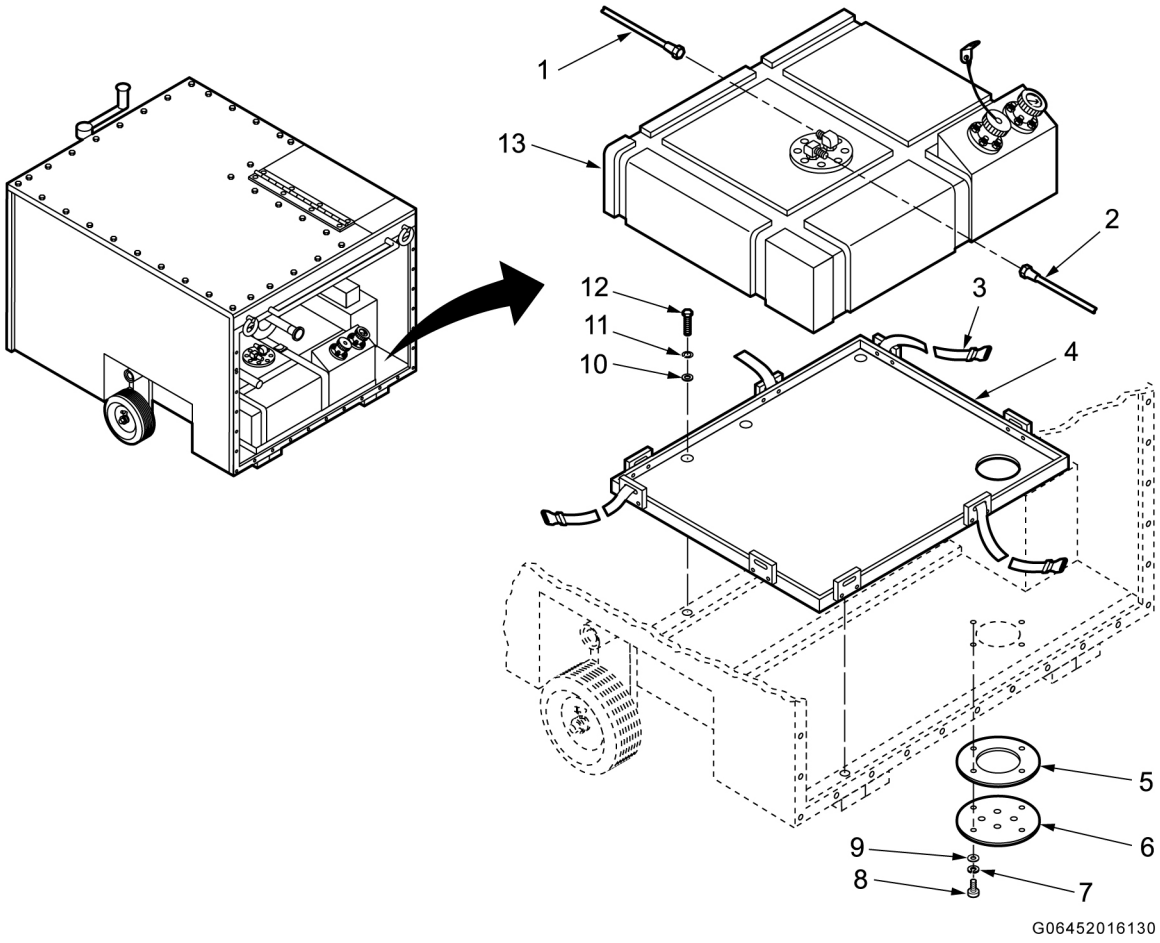


Figure 3. Fuel Tank Installation.

5. Reinstall ASH rear panel (WP 0020).
6. Extend the jack (Figure 4, Item 4) until the wheel assemblies (Figure 4, Item 1) are off the ground.
7. Remove pins (Figure 4, Item 2), rotate the wheel assemblies into their stowed position, and lock them in place by reinstalling the pins.
8. Retract the jack assembly until the ASH (Figure 4, Item 3) is resting on the ground.

FUEL TANK ASSEMBLY REPLACEMENT - (CONTINUED)

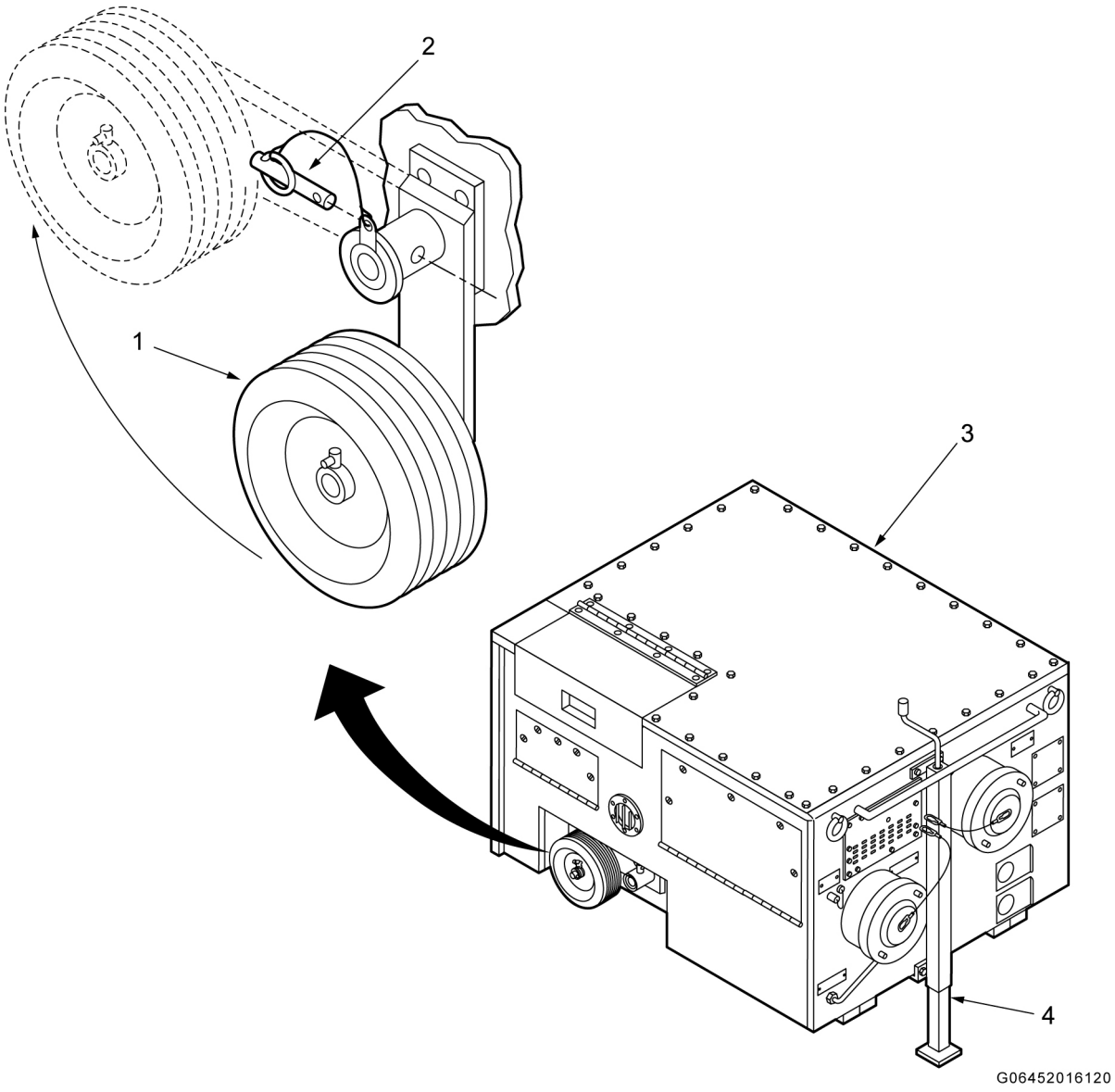


Figure 4. Fuel Tank Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL PUMP AND SOLENOID VALVES REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0098, Figure 23, Item 2)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References

Equipment Condition
ASH disconnected from power source
Top panel removed, WP 0019

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

FUEL PUMP AND SOLENOID VALVES REPLACEMENT

Removal

1. Open right rear door (Figure 1, Item 3) and front side door (Figure 1, Item 4).
2. Disconnect metal-tube fuel-line assemblies (Figure 1, Item 5, 6, 7, and 8).
3. Tag and disconnect wire TB3-9/L1-BLK (Figure 1, Item 12) from TB3 (Figure 1, Item 1) terminal 9. Reinstall the other wires that had been on terminal 9.
4. Tag and disconnect the following wires from TB1 (Figure 1, Item 2):
   a. Wire TB1-7/L1-BLK (Figure 1, Item 11) from terminal 7.
   b. Wire TB1-9/L2-BLK (Figure 1, Item 10) from terminal 9.
   c. Wire TB1-4/L2–BLK (Figure 1, Item 9) from terminal 4.
   d. Reinstall any other wires that had been on each terminal.
5. Remove tie-down straps (Figure 1, Item 13) as required.
6. Slide wires (Figure 1, Item 9), (Figure 1, Item 10), (Figure 1, Item 11), and (Figure 1, Item 12) through clamp (Figure 1, Item 17) and out from beneath the combustor air intake.
7. Remove two screws (Figure 1, Item 15), two lockwashers (Figure 1, Item 14) and pump assembly (Figure 1, Item 16). Discard lockwashers.

FUEL PUMP AND SOLENOID VALVES REPLACEMENT - (CONTINUED)

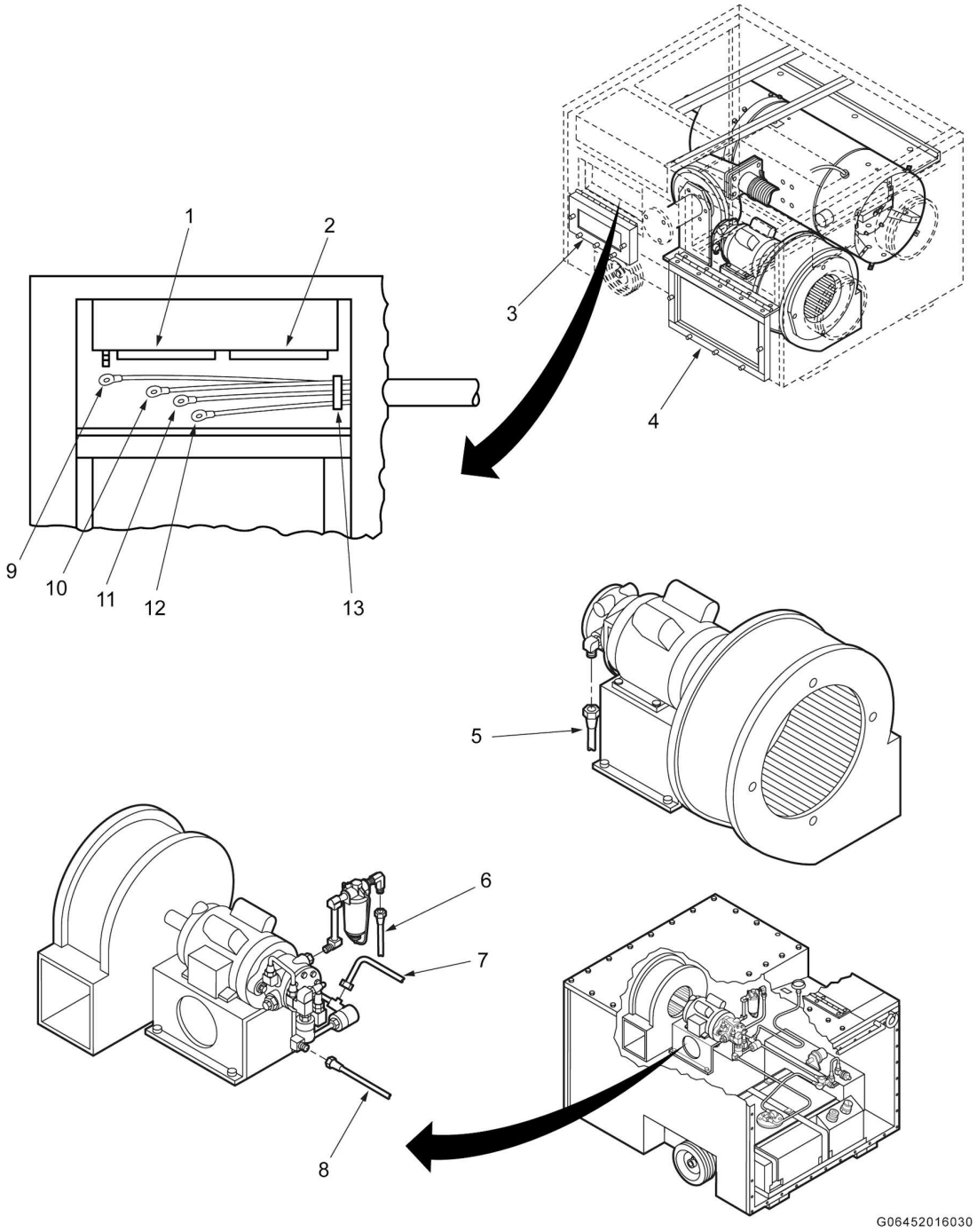


Figure 1. Fuel Pump and Solenoid Valves Removal (Sheet 1 of 2).

FUEL PUMP AND SOLENOID VALVES REPLACEMENT - (CONTINUED)

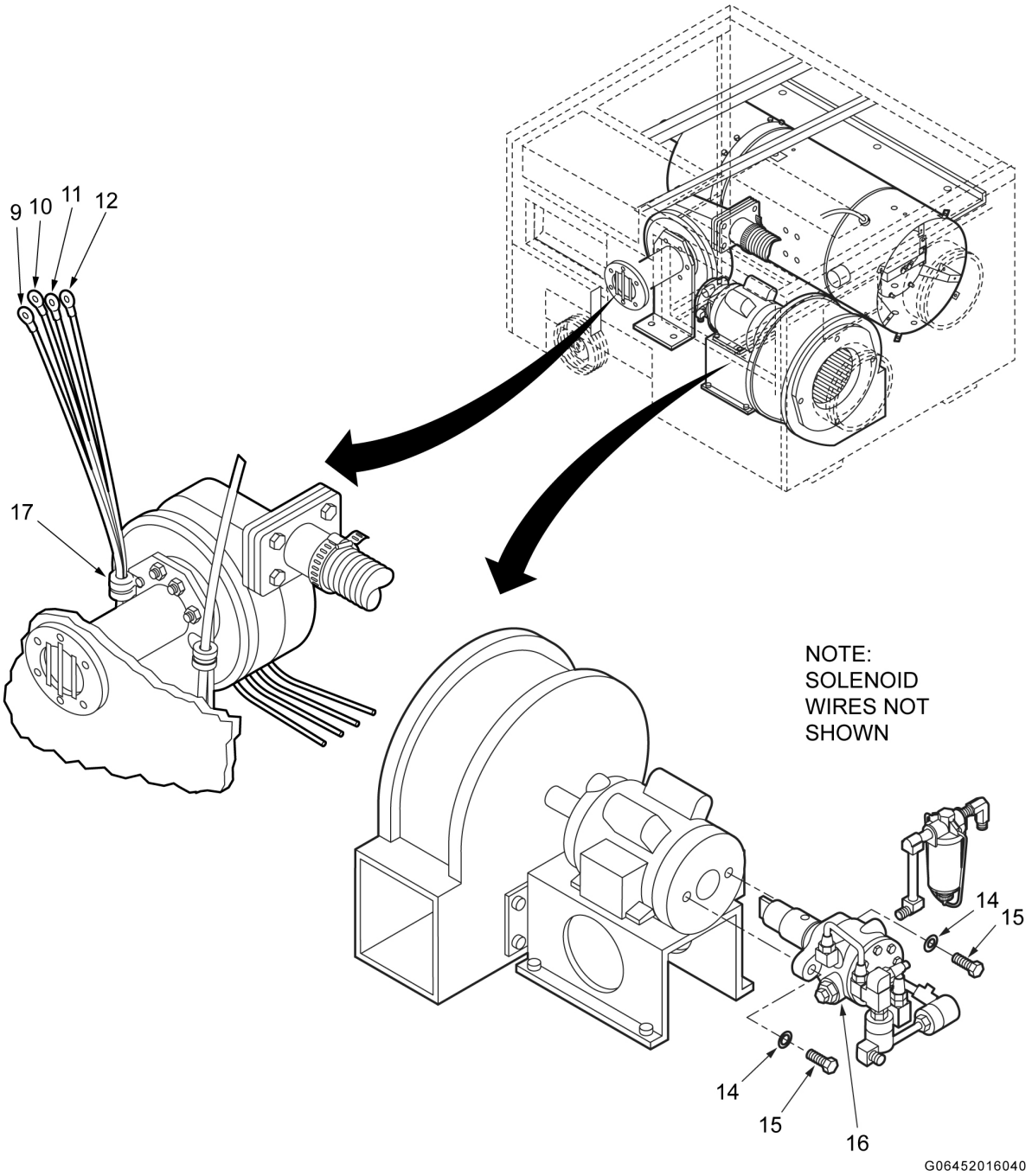


Figure 1. Fuel Pump and Solenoid Valves Removal (Sheet 2 of 2).

Installation

1. Align the rigid shaft coupling (Figure 2, Item 6) with the slot in motor (Figure 2, Item 5) and install pump assembly (Figure 2, Item 7) with two lockwashers (Figure 2, Item 9) and two screws (Figure 2, Item 8).
2. Route solenoid wires (Figure 2, Item 1), (Figure 2, Item 2), (Figure 2, Item 3), and (Figure 2, Item 4) beneath combustion intake and up through clamp (Figure 2, Item 10).

FUEL PUMP AND SOLENOID VALVES REPLACEMENT - (CONTINUED)

3. Connect the following wires to TB1 (Figure 3, Item 1).
   a. Wire (Figure 3, Item 9), TB1-4/L2-BLK, to terminal 4.
   b. Wire (Figure 3, Item 10), TB1-9/L2-BLK, to terminal 9.
   c. Wire (Figure 3, Item 11), TB1-7/L1-BLK, to terminal 7.
4. Connect wire (Figure 3, Item 12) TB3-9/L1-BLK to terminal 9 on TB3 (Figure 3, Item 2).
5. Install tie-down straps (Figure 3, Item 13) as required.
6. Connect metal-tube fuel-line assemblies (Figure 3, Item 5), (Figure 3, Item 6), (Figure 3, Item 7), and (Figure 3, Item 8).
7. Close rear side door (Figure 3, Item 3) and front side door (Figure 3, Item 4).
8. Replace top panel .

FUEL PUMP AND SOLENOID VALVES REPLACEMENT - (CONTINUED)

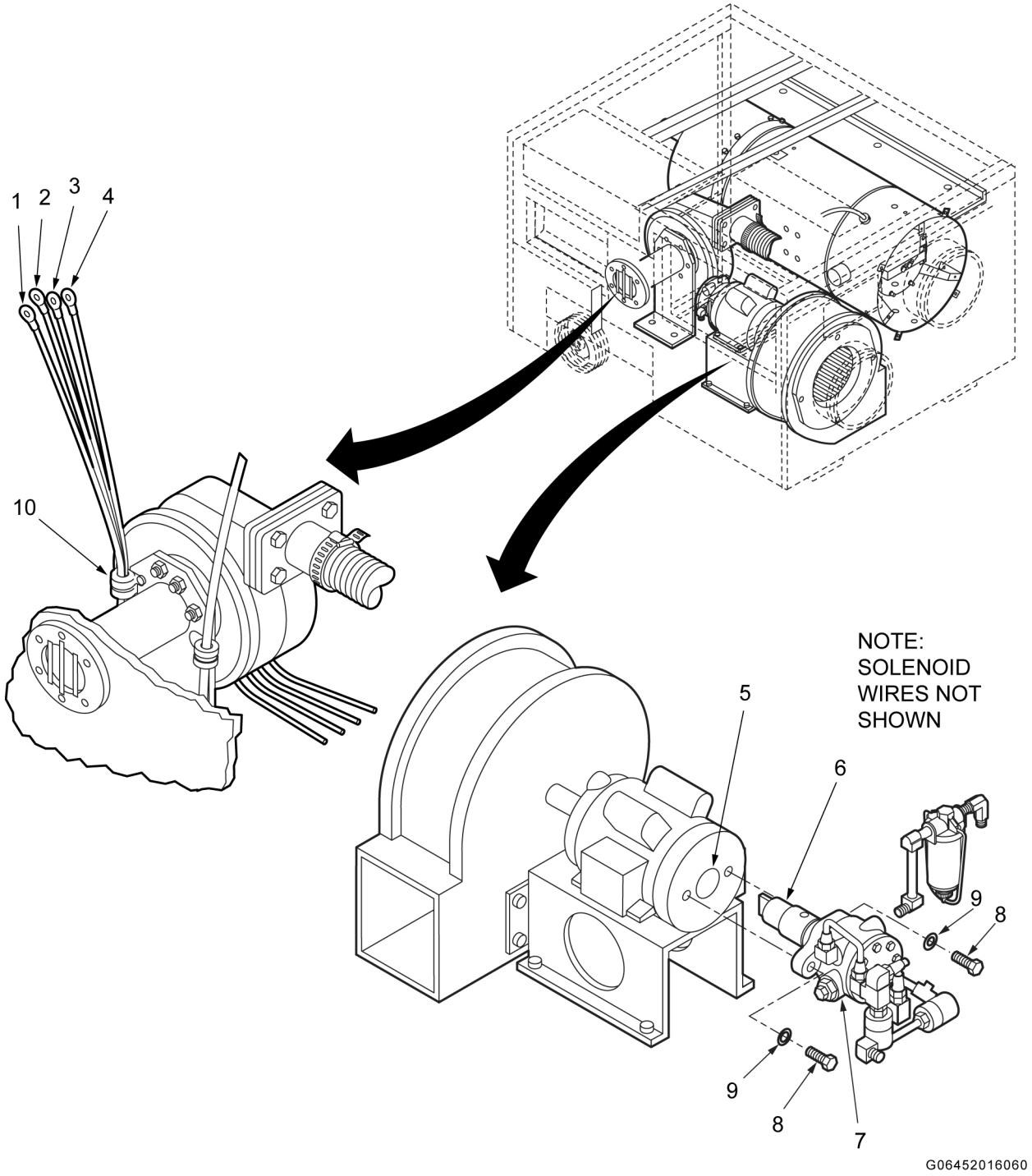


Figure 2. Fuel Pump and Solenoid Valves Installation.

FUEL PUMP AND SOLENOID VALVES REPLACEMENT - (CONTINUED)

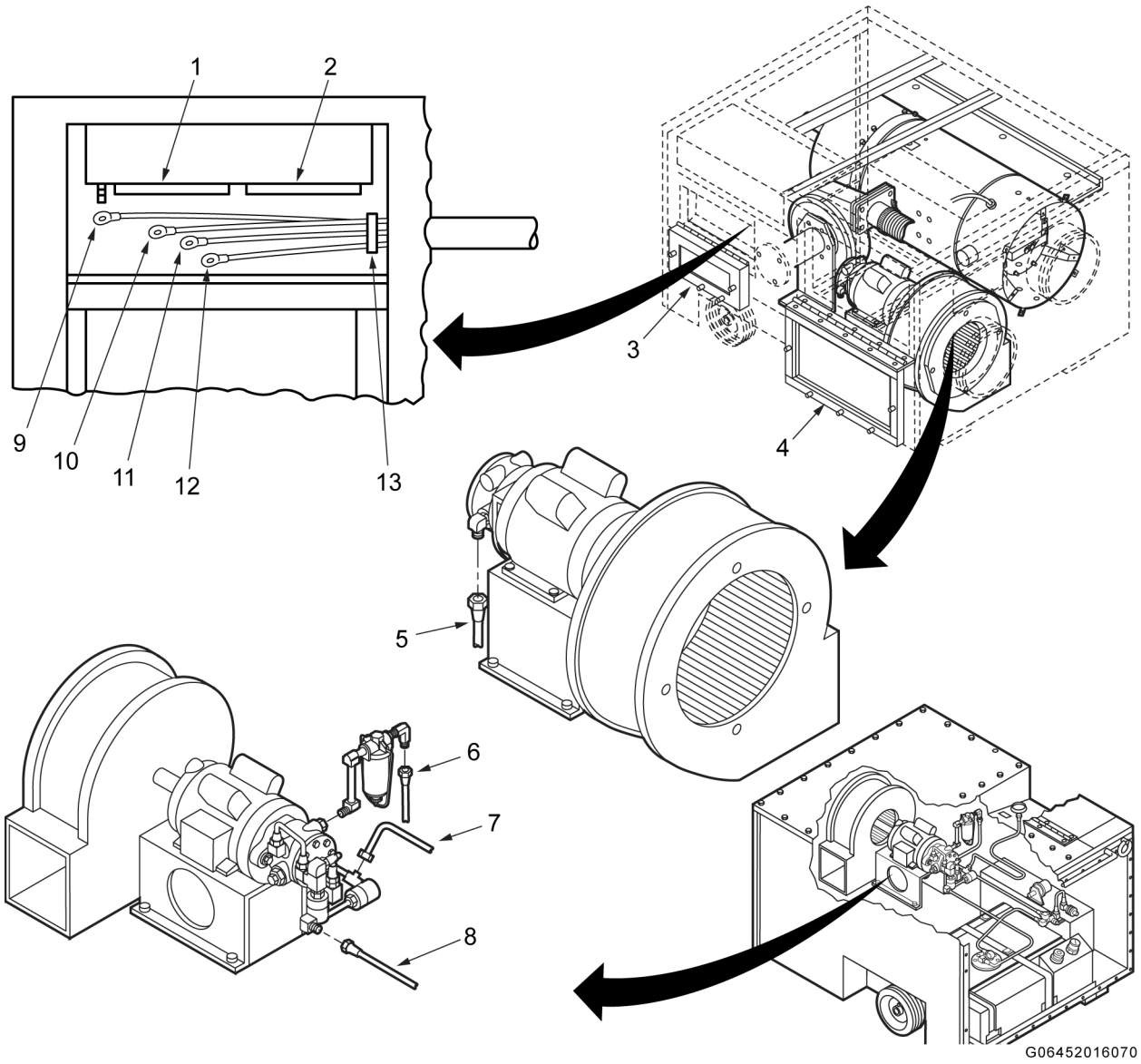


Figure 3. Fuel Pump and Solenoid Valves Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CIRCULATING AIR MOTOR AND FAN REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0098, Figure 20, Item 2)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (2)

Equipment Condition
ASH disconnected from power source
Fuel pump and solenoid valves removed, WP 0032
Inlet screen removed, WP 0023

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

CIRCULATING AIR MOTOR AND FAN REPLACEMENT

Removal

NOTE

Two people are required to remove the motor.

1. Open rear side door (Figure 1, Item 1) and front side door (Figure 1, Item 2).
2. Remove the four lock nuts (Figure 1, Item 15), four bolts (Figure 1, Item 22) and the eight flat washers (Figure 1, Item 16) and (Figure 1, Item 21) that hold the motor flange in place.
3. Access the fan shaft from the inlet-screen opening. Loosen the setscrews (Figure 1, Item 18) and remove the key (Figure 1, Item 17).
4. Access the motor (Figure 1, Item 20) from the front side door. Slide it off fan assembly (Figure 1, Item 19).
5. Lay the motor (Figure 1, Item 20) on its side with its junction box facing up.
6. Remove two screws (Figure 1, Item 8) and cover (Figure 1, Item 9). Gently the pull the two sets of connected wires (Figure 1, Item 3) outside of junction box.
7. Tag the wires (Figure 1, Item 3) and remove their two connectors (Figure 1, Item 4).

CIRCULATING AIR MOTOR AND FAN REPLACEMENT - (CONTINUED)

8. Remove the ASH-side wires (Figure 1, Item 3) through the hole in the base of the motor (Figure 1, Item 20).
9. Remove screw (Figure 1, Item 7), lockwasher (Figure 1, Item 6), and ground wire (Figure 1, Item 5) and pull the ground wire through the hole in the base of the motor.
10. Remove motor (Figure 1, Item 20) from the ASH.
11. Remove four screws (Figure 1, Item 10), four lockwashers (Figure 1, Item 11), four flat washers (Figure 1, Item 12) and inlet cone (Figure 1, Item 13). Discard lockwashers.
12. Remove fan (Figure 1, Item 14) through front of unit.

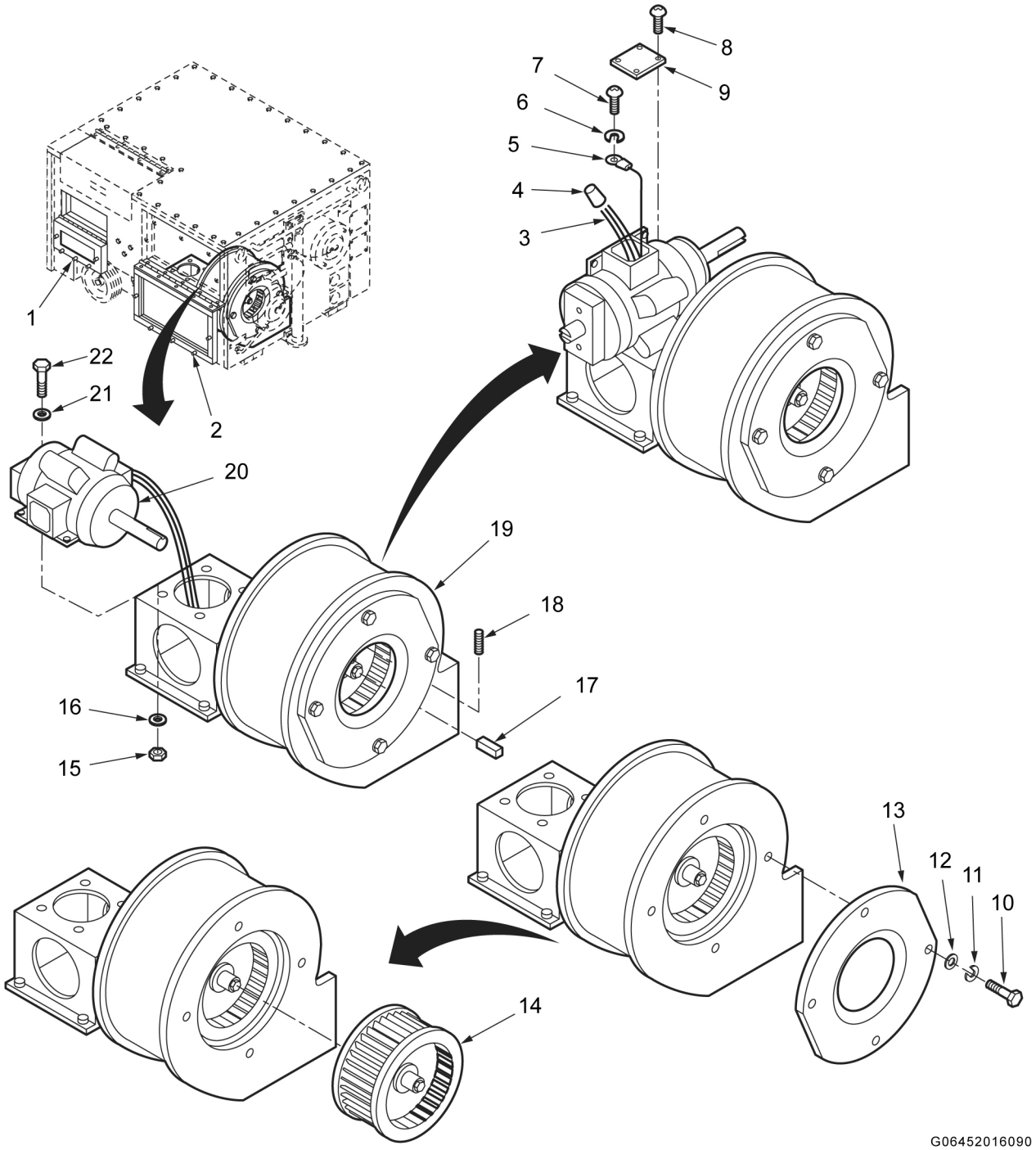


Figure 1. Circulating Air Motor and Fan Removal.

CIRCULATING AIR MOTOR AND FAN REPLACEMENT - (CONTINUED)

Installation

1. Place motor (Figure 2, Item 12) on its side with junction box facing up on base (Figure 2, Item 3).
2. Feed wires B1-T1, TB1-8/T5, (Figure 2, Item 4), B1-T4, TB1-3/T8 (Figure 2, Item 5), and B1-GRD/G1 (Figure 2, Item 7) through hole in bottom of junction box on side of motor (Figure 2, Item 12).
3. Remove one wire nut (Figure 2, Item 6) connecting wires T1 and T5. Twist wire (Figure 2, Item 4) with T1 and T5 and install wire nut (Figure 2, Item 6).
4. Remove the other wire nut (Figure 2, Item 6) connecting wires T4 and T8. Twist wire (Figure 2, Item 5) with T4 and T8 and install wire nut (Figure 2, Item 6).
5. Install ground wire B1-GRD/G1 (Figure 2, Item 7), lockwasher (Figure 2, Item 8) and screw (Figure 2, Item 9).
6. Gently push all wiring into junction box on motor (Figure 2, Item 12).
7. Install cover (Figure 2, Item 11) and two screws (Figure 2, Item 10).
8. Turn motor (Figure 2, Item 23) onto its base with its shaft inserted into the centrifugal fan housing (Figure 2, Item 20).
9. Insert fan (Figure 2, Item 17) into the fan housing and onto the fan-motor shaft.
10. Install key (Figure 2, Item 18) and two setscrews (Figure 2, Item 19). Make sure that the fan is pushed onto the motor shaft as far as it can go before tightening the setscrews.
11. Install the motor-mounting hardware hand tight: eight flat washers (Figure 2, Item 22), four bolts (Figure 2, Item 25) and four locknuts (Figure 2, Item 21).
12. Turn fan (Figure 2, Item 17) by hand. If fan turns freely without rubbing against the fan housing, then tighten hardware installed in Step 11. If necessary, realign motor (Figure 2, Item 23) until fan turns freely and tighten hardware installed in Step 11.
13. Reinstall the inlet cone (Figure 2, Item 16) with four bolts (Figure 2, Item 13), fresh lockwashers (Figure 2, Item 14), and flat washers (Figure 2, Item 15).
14. Reinstall the fuel pump assembly.
15. Reinstall the inlet screen.
16. Close front side door (Figure 2, Item 2) and rear side door (Figure 2, Item 1).

CIRCULATING AIR MOTOR AND FAN REPLACEMENT - (CONTINUED)

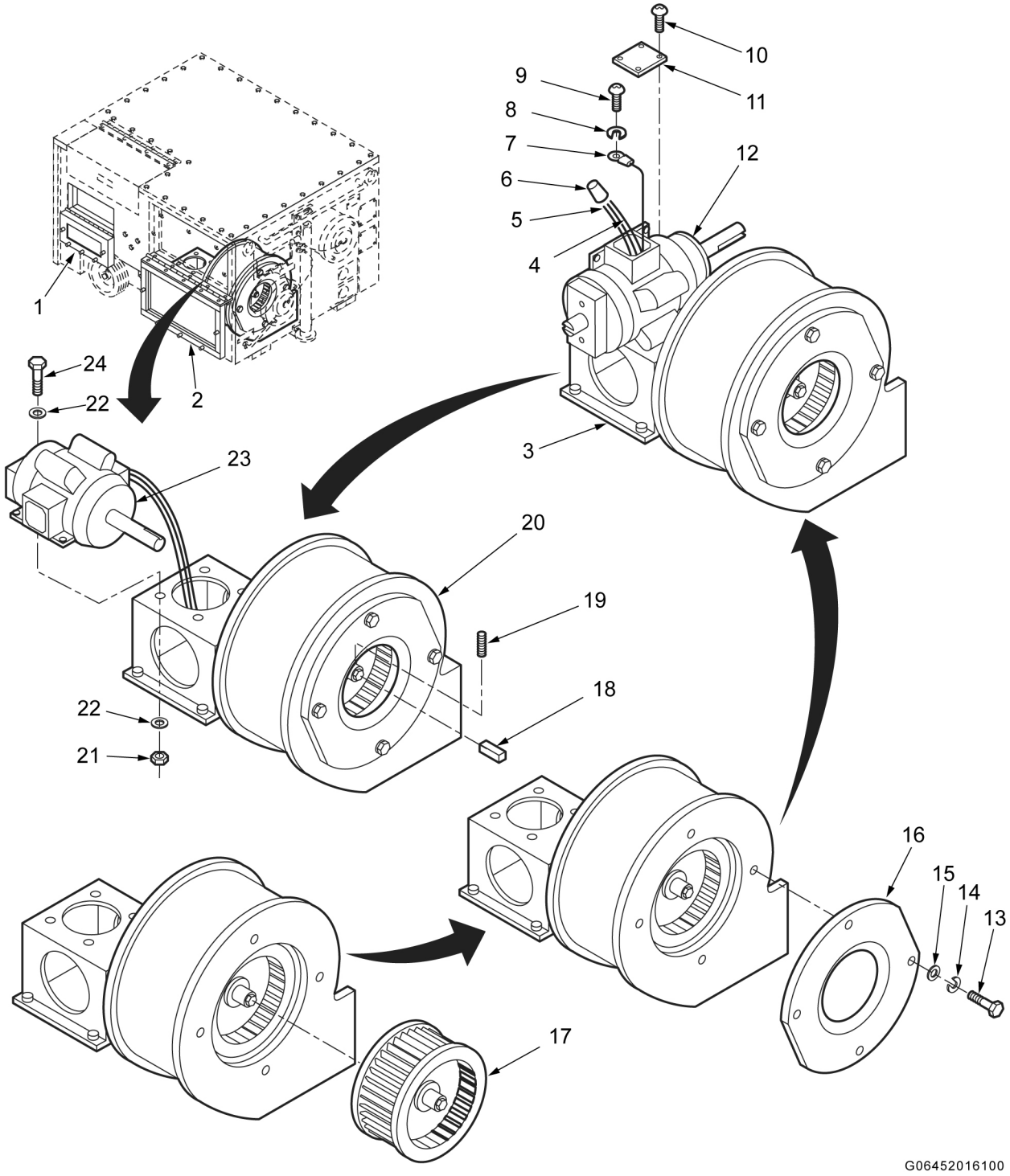


Figure 2. Circulating Air Motor and Fan Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0098, Figure 22, Item 3)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Circulating air fan and motor removed, WP 0033
Fuel pump and solenoid valves removed, WP 0032
Top panel removed, WP 0019

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance.

CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY REPLACEMENT

Removal

1. Open front side door (Figure 1, Item 1).
2. Remove four nuts (Figure 1, Item 4), four lockwashers (Figure 1, Item 5), eight flat washers (Figure 1, Item 6), and four machine bolts (Figure 1, Item 10). Discard lockwashers.
3. Remove four screws (Figure 1, Item 9), four lockwashers (Figure 1, Item 8) and four flat washers (Figure 1, Item 7). Discard lockwashers.
4. Remove motor base (Figure 1, Item 11) and centrifugal fan housing (Figure 1, Item 3).

Inspection

1. Inspect all parts for wear and cracks.
2. Inspect all hardware for stripped or damaged threads.

Installation

1. Place motor base (Figure 1, Item 11) in bottom of frame (Figure 1, Item 2), align centrifugal fan housing (Figure 1, Item 3) with motor base and secure with four flat washers (Figure 1, Item 7), four lockwashers (Figure 1, Item 8) and four screws (Figure 1, Item 9).
2. Align the motor base (Figure 1, Item 11) with the mounting holes in bottom of frame (Figure 1, Item 2).
3. Install eight flat washers (Figure 1, Item 6), four machine bolts (Figure 1, Item 10), four lockwashers (Figure 1, Item 5) and four nuts (Figure 1, Item 4) in motor base (Figure 1, Item 11) and frame (Figure 1, Item 2). Hand tighten only.
4. Install circulating air fan and motor IAW WP 0033.
5. Install fuel pump and solenoid valves IAW WP 0032.
6. Tighten hardware installed in Step 3.
7. Close front side door (Figure 1, Item 1).

CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY REPLACEMENT - (CONTINUED)

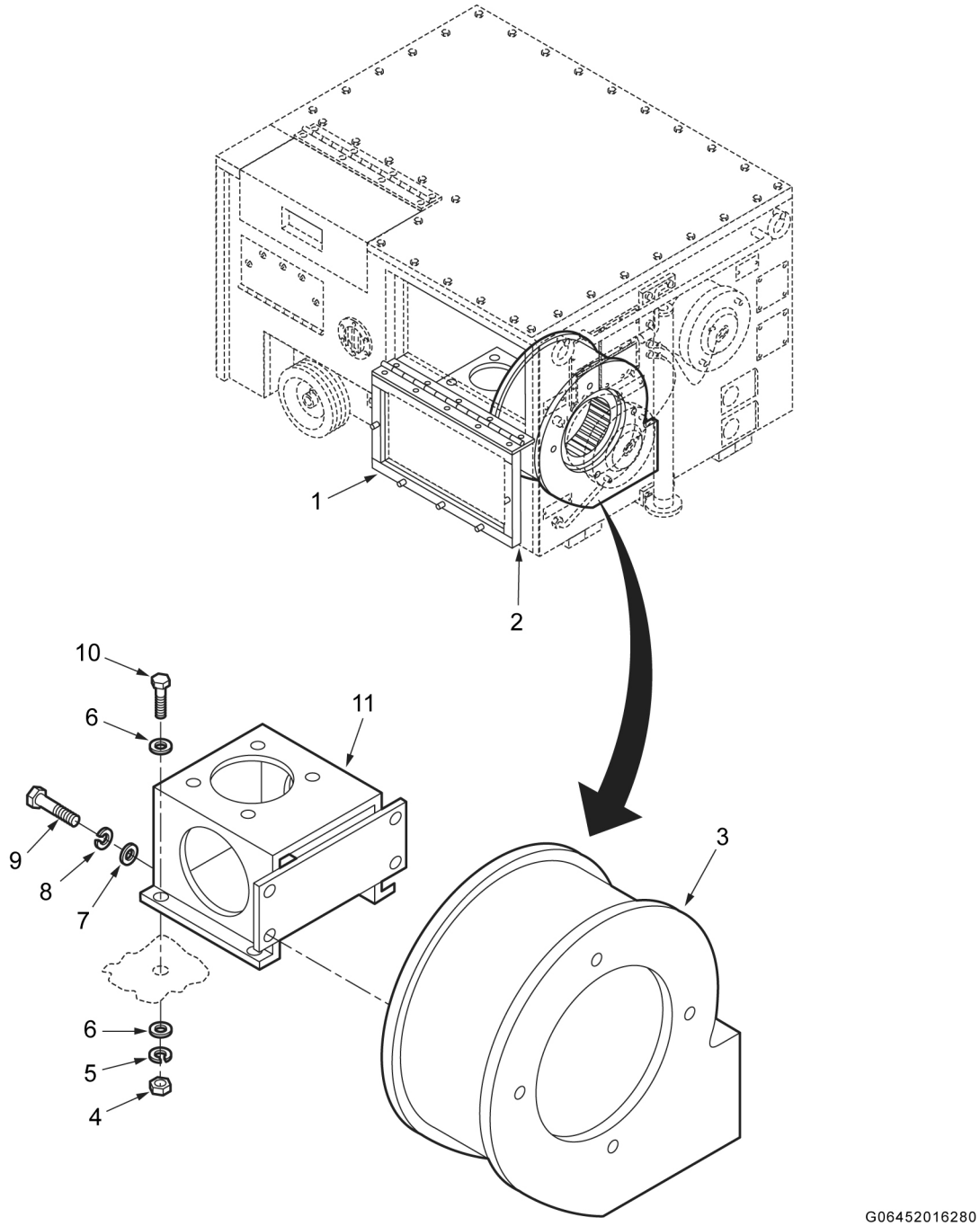


Figure 1. Circulating Air Fan/Pump/Motor Assembly Removal.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket (WP 0084, Figure 8)
Gasket (WP 0084, Figure 9)
Lockwasher (WP 0099, Figure 24, Item 4)
Lockwasher (WP 0099, Figure 24, Item 10)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Top panel removed, WP 0019

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT

Removal

1. Open the right-side rear door (Figure 1, Item 1) and larger, right-side front door (Figure 1, Item 2) on the ASH.
2. Pull the air inlet cover (Figure 1, Item 9) off the front of the fan inlet guard (Figure 1, Item 12).
3. Remove the six nuts (Figure 1, Item 13), six lockwashers (Figure 1, Item 14), twelve flat washers (Figure 1, Item 11), and six bolts (Figure 1, Item 10) that attach the air inlet cover (Figure 1, Item 9) and fan guard (Figure 1, Item 12) to the frame and the air inlet of the combustion fan assembly (Figure 1, Item 3). Discard the lockwashers.
4. With the removal of these fasteners, the air inlet cover (Figure 1, Item 9) and fan guard (Figure 1, Item 12) are free to be removed from the frame and air inlet of the combustion fan assembly (Figure 1, Item 3).
5. Remove the two nuts (Figure 1, Item 8), two lockwashers (Figure 1, Item 7) and two flat washers (Figure 1, Item 6) from the studs at the 3 o'clock and 9 o'clock positions on the fan mount bracket (Figure 1, Item 17). Discard the lockwashers.
6. Remove the clamp (Figure 1, Item 16), wire bundle (Figure 1, Item 15), clamp (Figure 1, Item 4), and fuel line (Figure 1, Item 5) from the studs at the 3 o'clock and 9 o'clock positions on the fan mount bracket (Figure 1, Item 17).

COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT - (CONTINUED)

7. Tag and disconnect the BLACK wire (Figure 1, Item 32) from TM1-11, the WHITE wire (Figure 1, Item 33) from TB1-5 (Figure 1, Item 19), and the GREEN wire (Figure 1, Item 34) from the ground stud (Figure 1, Item 35) on the control box (Figure 1, Item 18).
8. Reconnect any other wires that may have been disconnected at shared terminal points to gain access to the above specified wires.
9. Cut wire tie-down straps (Figure 1, Item 20), as required.
10. Remove the wire tie-down straps (Figure 1, Item 22) and wire bundle (Figure 1, Item 21) from the duct (Figure 1, Item 23).
11. Loosen the two clamps (Figure 1, Item 24) and remove the duct (Figure 1, Item 23) and clamps from the outlet of the combustion fan assembly (Figure 1, Item 3).
12. Remove two nuts (Figure 1, Item 28), two lockwashers (Figure 1, Item 29), four flat washers (Figure 1, Item 27), ground wire (Figure 1, Item 26), and two bolts (Figure 1, Item 25) from the foot of the fan mount bracket (Figure 1, Item 17). Discard the lockwashers.
13. Remove the combustion fan assembly (Figure 1, Item 3).
14. Remove the gasket (Figure 1, Item 30) from the air inlet (Figure 1, Item 31) of the combustion fan assembly (Figure 1, Item 3). Discard the gasket.

COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT - (CONTINUED)

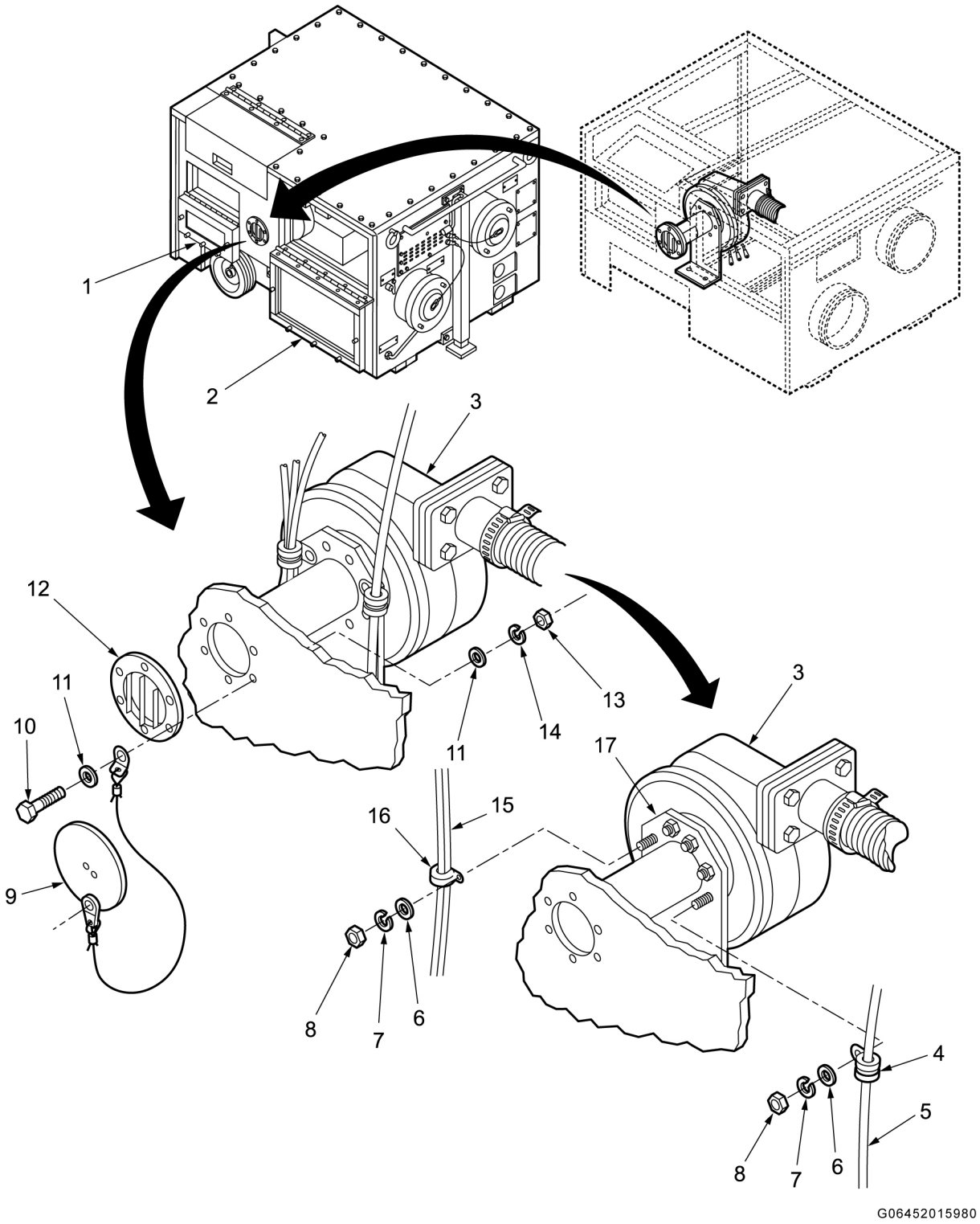


Figure 1. Combustion Fan Removal (Sheet 1 of 2).

COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT - (CONTINUED)

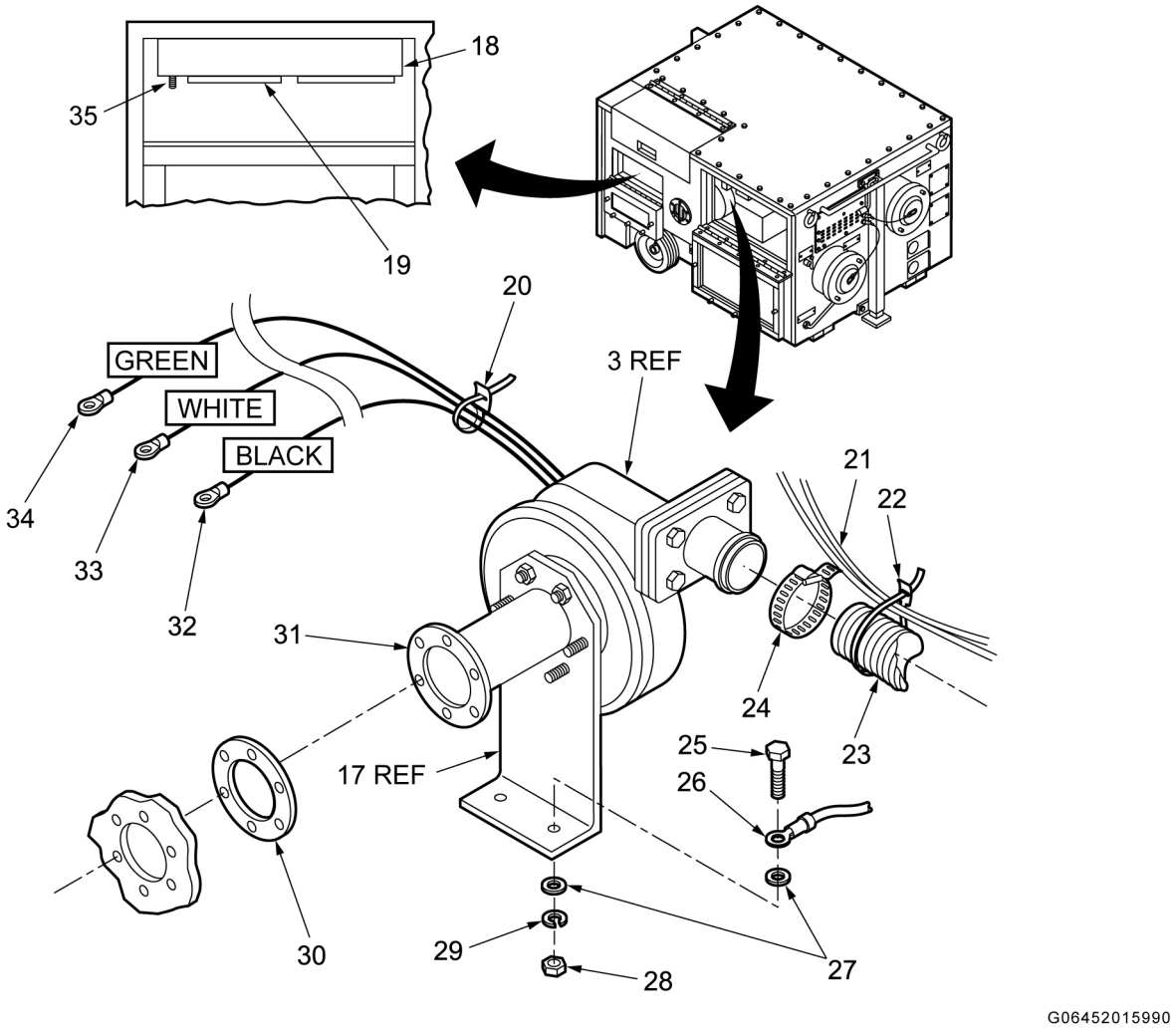


Figure 1. Combustion Fan Removal (Sheet 2 of 2).

Installation

1. Install the new gasket (, Figure 8)(Figure 2, Item 9) on the frame (Figure 2, Item 10), aligning the holes in the gasket with the holes in the frame.
2. Mount the combustion fan assembly (Figure 2, Item 1) into the interior of the ASH, ensuring that it is properly positioned with the air inlet of the fan assembly (Figure 2, Item 8) resting flush against the gasket (Figure 2, Item 9) on the frame (Figure 2, Item 10).
3. Install two bolts (Figure 2, Item 2), ground wire (Figure 2, Item 3), four flat washers (Figure 2, Item 4), two new lockwashers (Figure 2, Item 6) and two nuts (Figure 2, Item 5) to fasten the foot of the fan mount bracket (Figure 2, Item 7) to the frame. Hand tighten only.
4. Press the air inlet of the combustion fan assembly (Figure 2, Item 8) against the gasket (Figure 2, Item 9) on the interior of the frame (Figure 2, Item 10).
5. Position the fan inlet guard (Figure 2, Item 16) on the exterior of the frame (Figure 2, Item 10) so the holes in each align.
6. Using all of the holes surrounding the fan inlet guard except the one at the 4 o'clock position, loosely install five bolts (Figure 2, Item 15), ten flat washers (Figure 2, Item 13), five new lockwashers (Figure 2, Item 12) and five nuts (Figure 2, Item 11) to secure the fan inlet guard (Figure 2, Item 16) to the frame (Figure 2, Item 10) and air inlet of the fan assembly (Figure 2, Item 8). Hand tighten only.

COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT - (CONTINUED)

7. Position the air inlet cover connector plate (Figure 2, Item 14) on the fan inlet guard (Figure 2, Item 16) on the open hole at the 4 o'clock position, and secure with one bolt (Figure 2, Item 15), two flat washers (Figure 2, Item 13), one new lockwasher (Figure 2, Item 12) and one nut (Figure 2, Item 11).
8. Secure the hardware above that was previously hand tightened. First, tighten the fan inlet guard hardware installed in Step 6; then, tighten the fan mount bracket hardware installed in Step 3. *It is important to execute these two tasks in the order specified.*
9. Install the clamp (Figure 2, Item 31) and wire bundle (Figure 2, Item 30) on the fan assembly (Figure 2, Item 1) on the stud at the 9 o'clock position, and secure with a flat washer (Figure 2, Item 27), new lockwasher (Figure 2, Item 28), and nut (Figure 2, Item 29).
10. Install the clamp (Figure 2, Item 25) and fuel line (Figure 2, Item 26) on the fan assembly (Figure 2, Item 1) on the stud at the 3 o'clock position, and secure with a flat washer (Figure 2, Item 27), new lockwasher (Figure 2, Item 28) and nut (Figure 2, Item 29).
11. Connect the wires on the control box (Figure 2, Item 18) as follows:
    a. Connect the WHITE wire (Figure 2, Item 34) to terminal board TB1-5 (Figure 2, Item 19).
    b. Connect the BLACK wire (Figure 2, Item 33) on terminal board TB1-11 (Figure 2, Item 19).
    c. Connect the GREEN wire (Figure 2, Item 32) to the ground stud (Figure 2, Item 17).
12. Route three wires from the fan assembly (Figure 2, Item 1) along the wire bundle and secure with two wire tie-down straps (Figure 2, Item 35).
13. Install the air duct (Figure 2, Item 24) on the air outlet of the fan assembly (Figure 2, Item 1) and secure with a clamp (Figure 2, Item 23).
14. Route the wire bundle (Figure 2, Item 21) along the air duct (Figure 2, Item 24) and secure with wire tie-down straps (Figure 2, Item 22), as required.
15. Close and secure both doors (Figure 2, Item 20) on the right side of the ASH.

COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT - (CONTINUED)

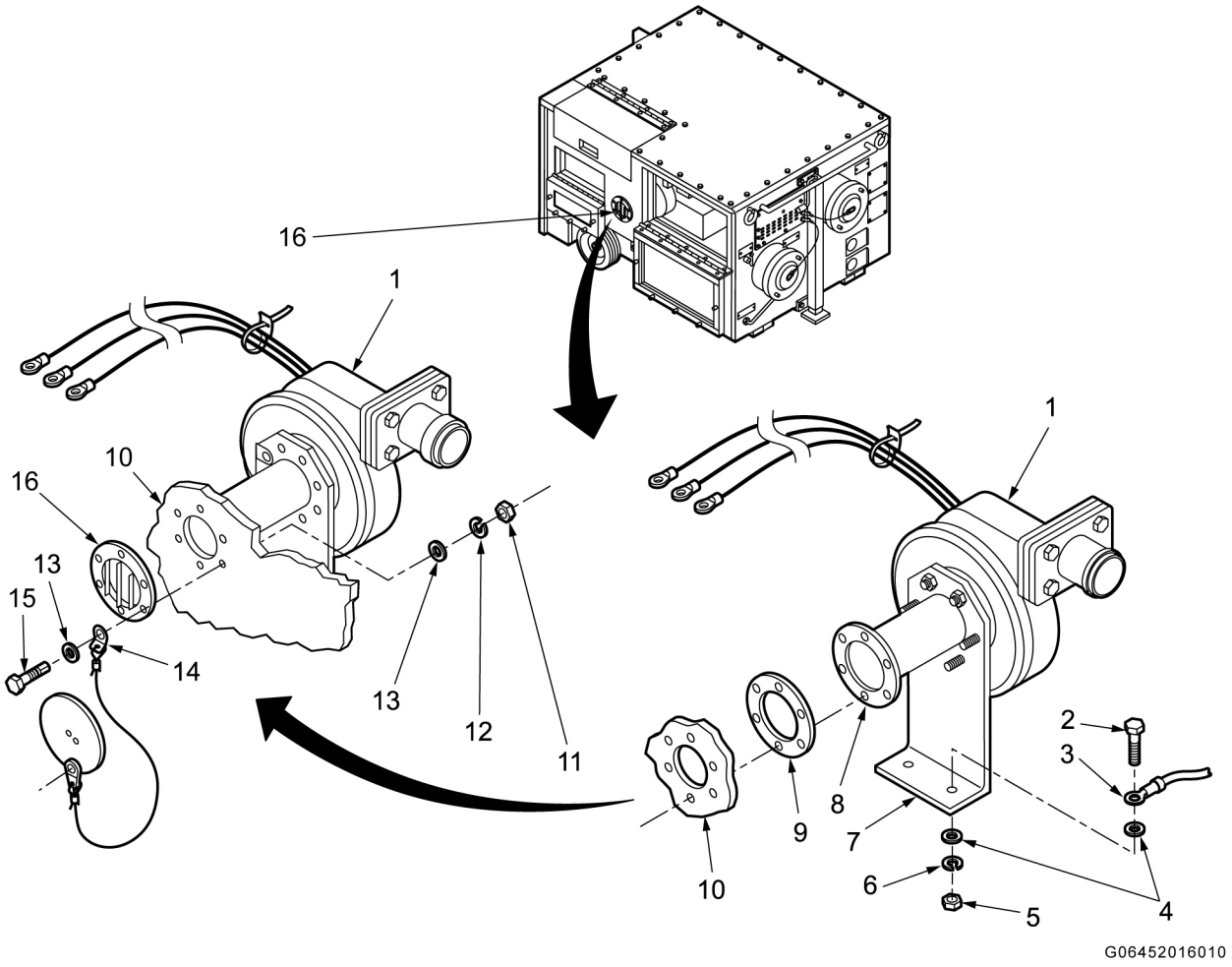


Figure 2. Combustion Fan Assembly Installation (Sheet 1 of 2).

COMBUSTION FAN AND MOUNT ASSEMBLY REPLACEMENT - (CONTINUED)

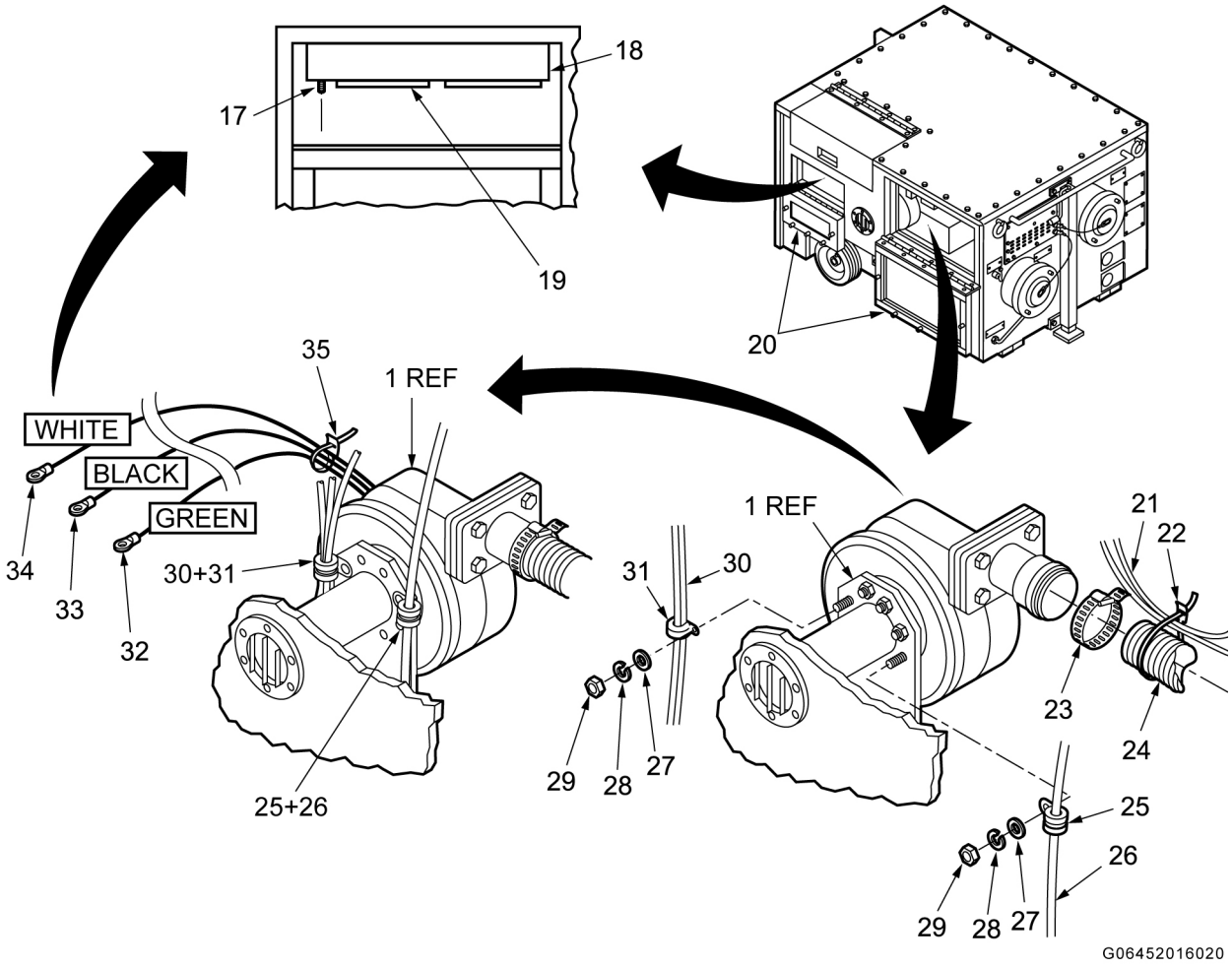


Figure 2. Combustion Fan Assembly Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

HEAT EXCHANGER ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Gasket (WP 0084, Figure 7)
Lockwasher (WP 0100, Figure 26, Item 2)
Lockwasher (WP 0100, Figure 26, Item 8)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
10-67-1

Equipment Condition
ASH disconnected from power source
Supply air duct cover removed, WP 0022
Supply air screen removed, WP 0023
ASH top panel removed, WP 0019
ASH rear panel removed, WP 0020
Transformer assembly removed

WARNING

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

HEAT EXCHANGER ASSEMBLY REPLACEMENT

Cover Plate And Gasket Removal

NOTE

The cover plate (Figure 1, Item 4) may have two braided wires attached on some models.

1. Remove the eight nuts (Figure 1, Item 7), eight lockwashers (Figure 1, Item 6), eight flat washers, (Figure 1, Item 5) and the thermostat bracket (Figure 1, Item 8) from the cover plate (Figure 1, Item 4). Discard the lockwashers.
2. Tag and disconnect the braided wires (Figure 1, Item 9) and (Figure 1, Item 10), if attached to the cover plate (Figure 1, Item 4).
3. Remove the cover plate (Figure 1, Item 4) and the gasket (Figure 1, Item 3). Discard the gasket.
4. Open the right-side rear door (Figure 1, Item 1) and larger, right-side front door (Figure 1, Item 2) on the ASH.

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

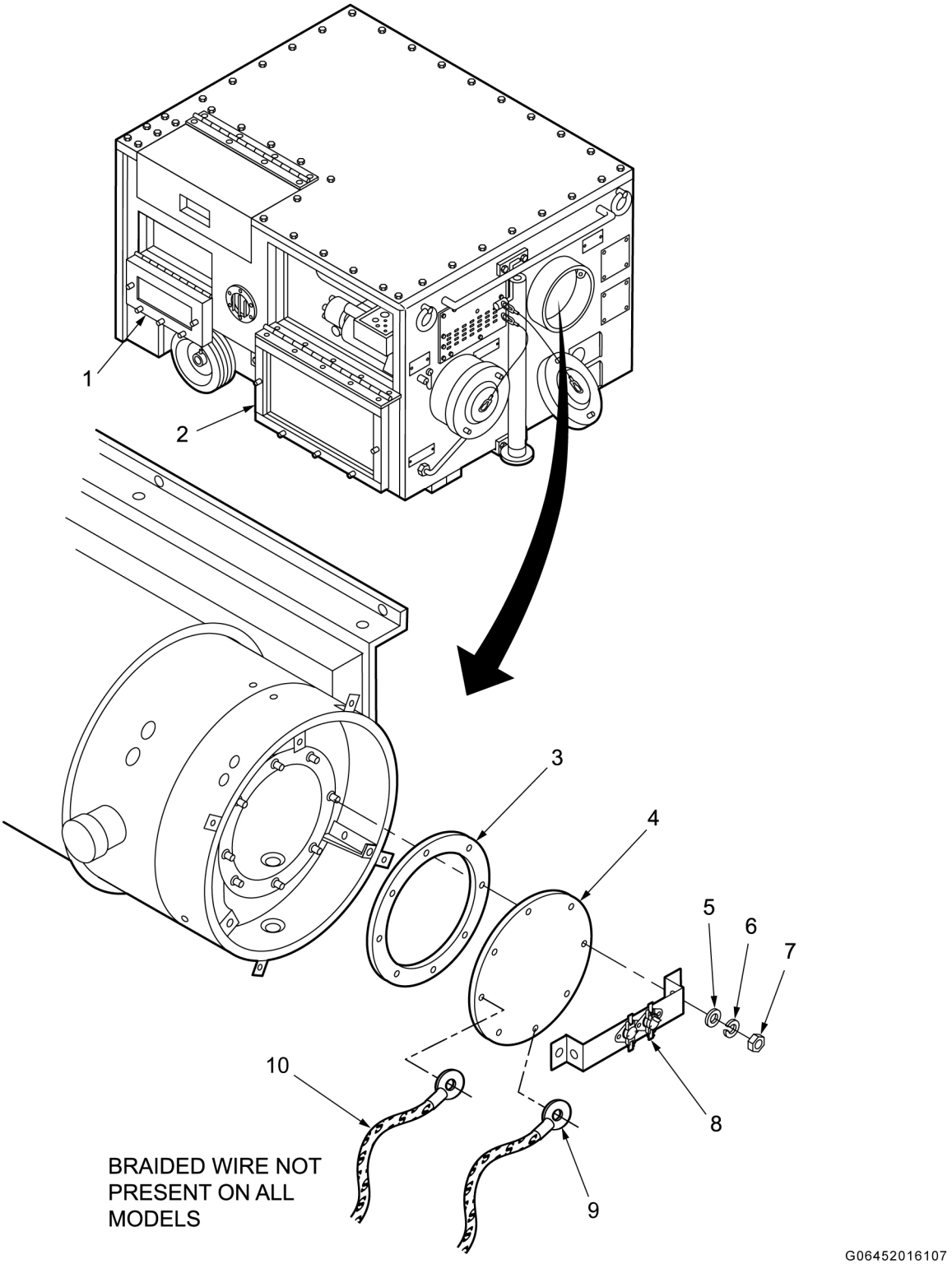


Figure 1. Heat Exchanger Assembly Removal: Burner Access Port Cover.

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

Flame Sensor Removal

NOTE

The grommets on the flame sensor do not come off the assembly.

The flame sensor (Figure 2, Item 6) may have a braided wire with terminal lug (Figure 2, Item 10) attached on some models. The braided wire is located between the two grommets (Figure 2, Item 8) and (Figure 2, Item 9).

1. Tag and disconnect wire TB3-6/D1-YEL (Figure 2, Item 1) and wire TB3-7/D1-YEL (Figure 2, Item 2) from TB3 (Figure 2, Item 3). Remove wire tie-down straps (Figure 2, Item 4), as required.
2. If the flame sensor (Figure 2, Item 6) is without braided wire; loosen the clamp (Figure 2, Item 5) and remove the flame sensor.
3. If the flame sensor (Figure 2, Item 6) has braided wire; loosen the clamps (Figure 2, Item 5) and (Figure 2, Item 13), slide the braided wire (Figure 2, Item 12) off the tube (Figure 2, Item 14), and remove the flame sensor.
4. Push the bottom grommet (Figure 2, Item 9) out of the heat exchanger (Figure 2, Item 7) toward heat exchanger shell (Figure 2, Item 11).
5. Push the top grommet (Figure 2, Item 8) away from the heat exchanger shell (Figure 2, Item 11) toward the heat exchanger center (Figure 2, Item 7).
6. Remove the flame sensor (Figure 2, Item 6) and braided wire (Figure 2, Item 10), if attached, from between the heat exchanger (Figure 2, Item 7) and heat exchanger shell (Figure 2, Item 11).

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

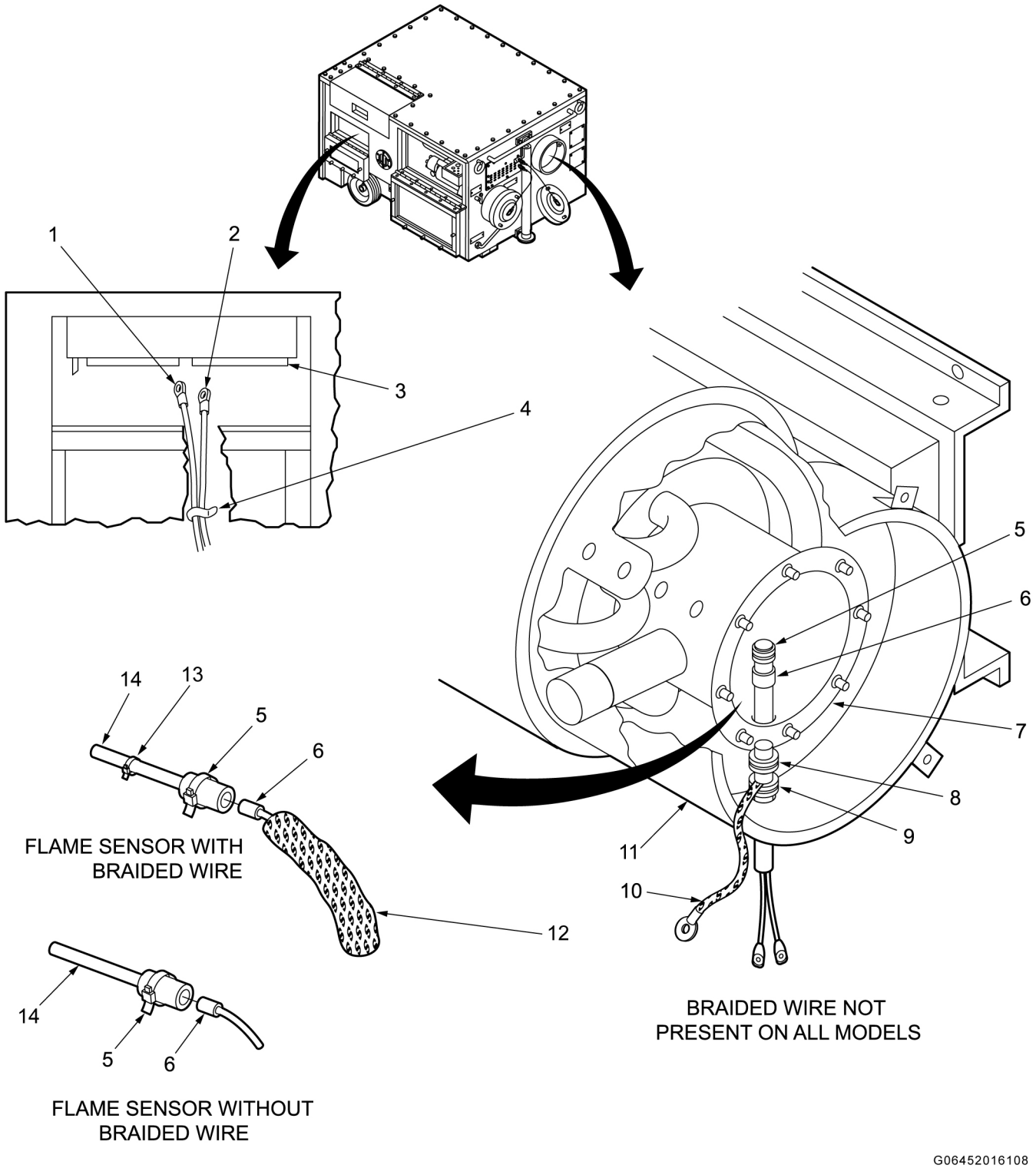


Figure 2. Heat Exchanger Assembly Removal: Flame Sensor.

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

Fuel Line and Sight Glass Removal

NOTE

The fuel line may have a braided wire with terminal lug attached on some models. The braided wire (Figure 3, Item 8) is located between the two grommets (Figure 3, Item 3) and (Figure 3, Item 4).

NOTE

There is an automatic check valve in the fuel pump, but be prepared for a small fuel leak when disconnecting the fuel line from the fuel pump and/or the burner. Have a “catch basin” type container ready to catch the leaking fuel or plenty of towels or rags underneath the work area to absorb the leaking fuel.

1. Disconnect the fuel line (Figure 3, Item 2) that runs from the fuel pump (Figure 3, Item 1) to the burner (Figure 3, Item 5) located inside the well of the heat exchanger. Refer to WP 0032 for illustrations and instructions on disconnecting the fuel line.
2. Push the outer grommet (Figure 3, Item 3) away from center of the heat exchanger (Figure 3, Item 6) toward the heat exchanger shell (Figure 3, Item 7).
3. Push the inner grommet (Figure 3, Item 4) away from the heat exchanger shell (Figure 3, Item 7) and toward the burner in the heat exchanger center (Figure 3, Item 5).
4. Remove the fuel line (Figure 3, Item 2) from between the heat exchanger (Figure 3, Item 6) and the heat exchanger shell (Figure 3, Item 7).
5. Unscrew the threaded sight glass (Figure 3, Item 9) from the end of the heat exchanger.

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

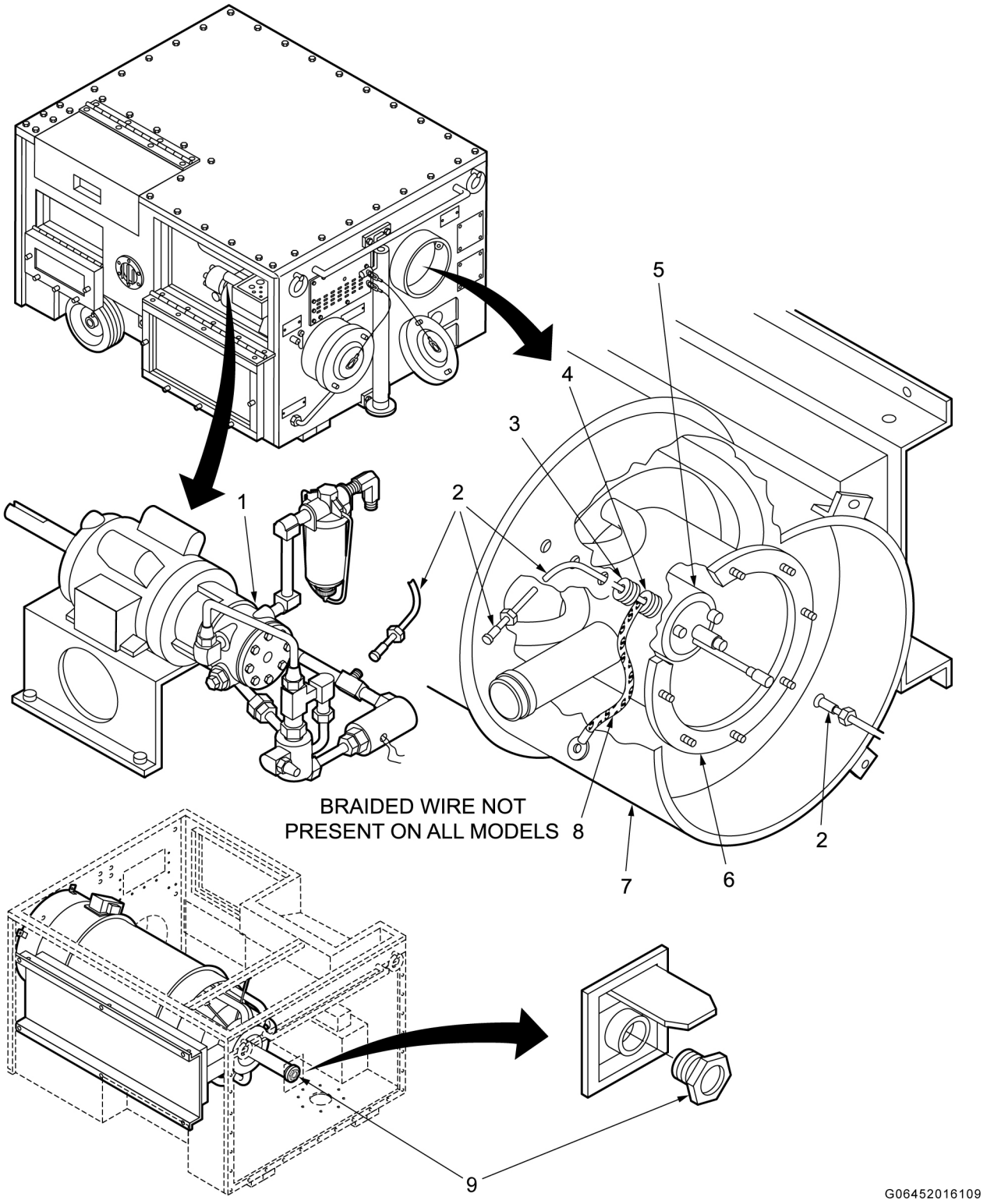


Figure 3. Heat Exchanger Assembly Removal/Installation: Fuel Line and Sight Glass.

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

Heat Exchanger Assembly Installation: Fuel Line and Sight Glass

NOTE

The fuel line may have a braided wire with terminal lug attached on some models. The braided wire (Figure 3, Item 8) is located between the two grommets (Figure 3, Item 3) and (Figure 3, Item 4).

1. Apply anti-seize compound to the threads on the sight glass (Figure 3, Item 9) and then screw the sight glass into the end of the heat exchanger (Figure 3, Item 10).
2. Install the rear panel on the ASH in accordance with WP 0020.
3. Insert one end of the fuel line (Figure 3, Item 2) through the hole near the top of the heat exchanger shell (Figure 3, Item 7) from the inside.
4. Insert the other end of the fuel line (Figure 3, Item 2) through the hole near top of the heat exchanger (Figure 3, Item 6).
5. Install grommet (Figure 3, Item 3) on heat exchanger shell (Figure 3, Item 7) and grommet (Figure 3, Item 4) on heat exchanger (Figure 3, Item 6).
6. Connect the fuel line (Figure 3, Item 2) to the fuel pump (Figure 3, Item 1) and the burner (Figure 3, Item 5).

Flame Sensor Installation

1. Insert the wire end of flame sensor (Figure 4, Item 7) through the bottom hole (Figure 4, Item 8) of heat exchanger shell (Figure 4, Item 11) from the inside.
2. Insert eye end of the flame sensor (Figure 4, Item 7) and braided wire (Figure 4, Item 12), if attached, through the bottom hole (Figure 4, Item 8) of heat exchanger shell (Figure 4, Item 11) from the outside.
3. Install grommet (Figure 4, Item 10) in heat exchanger shell (Figure 4, Item 11) and grommet (Figure 4, Item 9) in heat exchanger (Figure 4, Item 6).
4. If the flame sensor is equipped without a braided wire:
   a. Slide the clamp (Figure 4, Item 13) onto the tube (Figure 4, Item 14).
   b. Install the flame sensor (Figure 4, Item 7) into the tube, and secure with the clamp (Figure 4, Item 13).
5. If the flame sensor is equipped with a braided wire:
   a. Slide the clamps (Figure 4, Item 13) and (Figure 4, Item 15) onto the tube (Figure 4, Item 14).
   b. Install the flame sensor (Figure 4, Item 7) into the tube, and then slide the braided wire (Figure 4, Item 12) over the tube and secure with the clamp (Figure 4, Item 15).
   c. Position the clamp (Figure 4, Item 13) over the flame sensor (Figure 4, Item 7) and braided wire (Figure 4, Item 12) and secure.
6. Connect wires (Figure 4, Item 1) and (Figure 4, Item 2) as follows to the terminal board (TB3) (Figure 4, Item 3).
   a. Connect wire TB3-6/D1-YEL (Figure 4, Item 1) to position TB3-6.
   b. Connect wire D1-YEL/TB3-7 (Figure 4, Item 2) to position TB3-7.
7. Install wire tie-down straps (Figure 4, Item 4), as required.

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

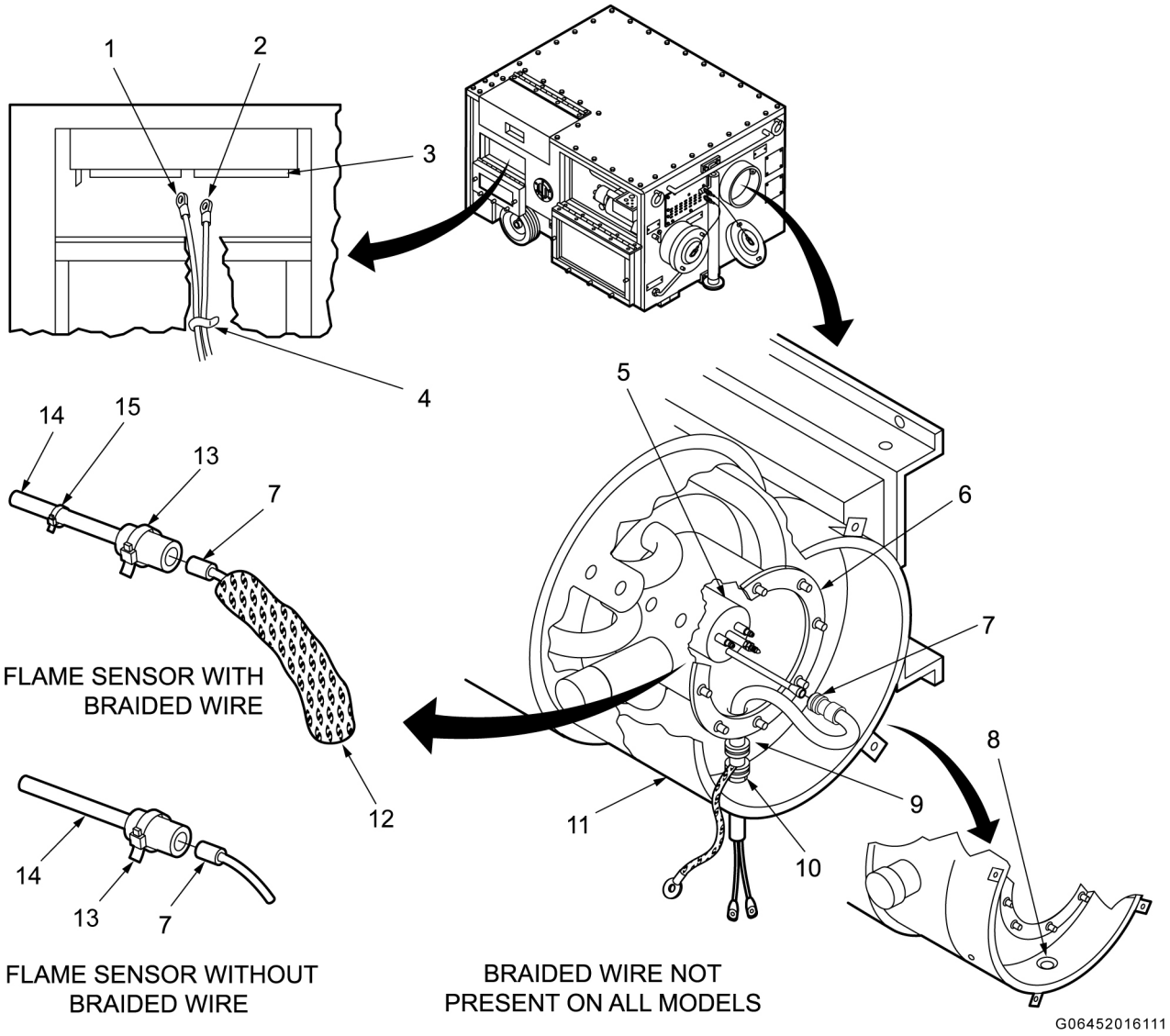


Figure 4. Heat Exchanger Assembly Installation: Flame Sensor.

8. Mount the new gasket (Figure 5, Item 3) on the cover plate (Figure 5, Item 4), aligning the holes in the gasket with the holes in the cover plate.

NOTE

The cover plate may have two braided wires attached on some models.

9. Mount the gasket and cover plate (Figure 5, Item 4) on the heat exchanger studs (Figure 5, Item 11), aligning the holes on the cover plate/gasket with the studs on the heat exchanger. If equipped with two braided wires, attach one braided wire (Figure 5, Item 9) on the stud at the 6 o'clock position and the other braided wire (Figure 5, Item 10) on the stud at the 10 o'clock position. Remove marker tags.

HEAT EXCHANGER ASSEMBLY REPLACEMENT - (CONTINUED)

10. Mount the thermostat bracket (Figure 5, Item 8) on the cover plate (Figure 5, Item 4) so it is horizontal to the bottom of the ASH. Typically, best results are achieved if the bracket is mounted using the heat exchanger studs (Figure 5, Item 11) at the 3 o'clock and 9 o'clock positions.
11. With the gasket, cover plate, braided wires (if any), and bracket all properly positioned, install eight flat washers (Figure 5, Item 5), eight new lockwashers (Figure 5, Item 6), and eight nuts (Figure 5, Item 7) on the eight heat exchanger studs (Figure 5, Item 11) and tighten securely.
12. Close right-side rear door (Figure 5, Item 1) and larger right-side front door (Figure 5, Item 2) on the ASH.

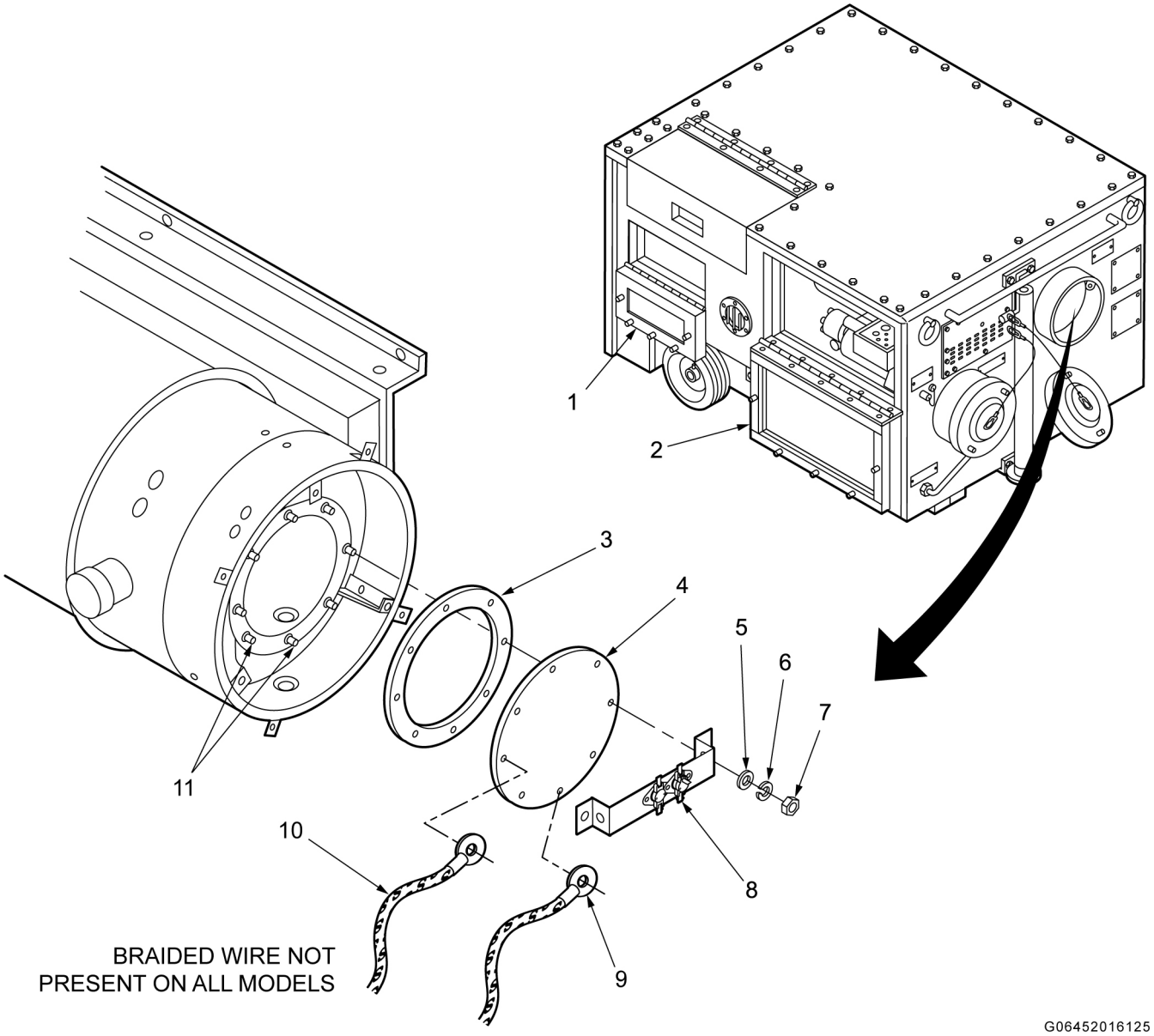


Figure 5. Heat Exchanger Assembly Installation: Burner Access Port Cover Plate.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

HEAT EXCHANGER MODEL H-120 REPLACEMENT

INITIAL SETUP:

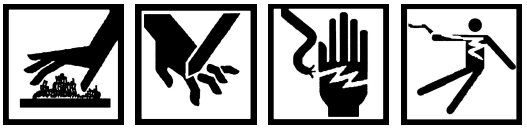
Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Gloves, Heat-Protective (WP 0116, Item 5)
Lockwasher (WP 0100, (Figure 25, Item 3)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (2)

Equipment Condition
ASH disconnected from power source
Burner assembly removed, WP 0042
Control box cover removed, WP 0018
Jack assembly removed, WP 0046
Rear panel removed, WP 0020
Supply air duct cover removed, WP 0022
Supply air screen removed, WP 0023
Top panel removed, WP 0019
Transformer assembly removed, WP 0040, WP 0041

WARNING



Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in Figure 1; the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

Insulation should only be removed when necessary to gain access to another component or when replacement of the insulation is necessary.

HEAT EXCHANGER MODEL H-120 REPLACEMENT

Removal

A precondition for the removal of the heat exchanger assembly from the ASH frame is the removal of the top and rear panels to provide access since the exchanger will be removed from the ASH in that direction. Refer to WP 0019 and WP 0020 for instructions on the proper method of removing the top and rear panels, respectively.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in Figure 1; the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

There are two braces that are referred to in this procedure that form the top of the ASH frame. To distinguish between them, the center brace that attaches to the heat exchanger shell will be referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace will be referred to as the secondary brace and is located closer to the rear of the exchanger housing the sight glass. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and affixed to the ASH frame during the entire procedure.

These primary and secondary braces, along with the heat exchanger's other major structural components, are highlighted in the overview of the heat exchanger assembly provided by Figure 1.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

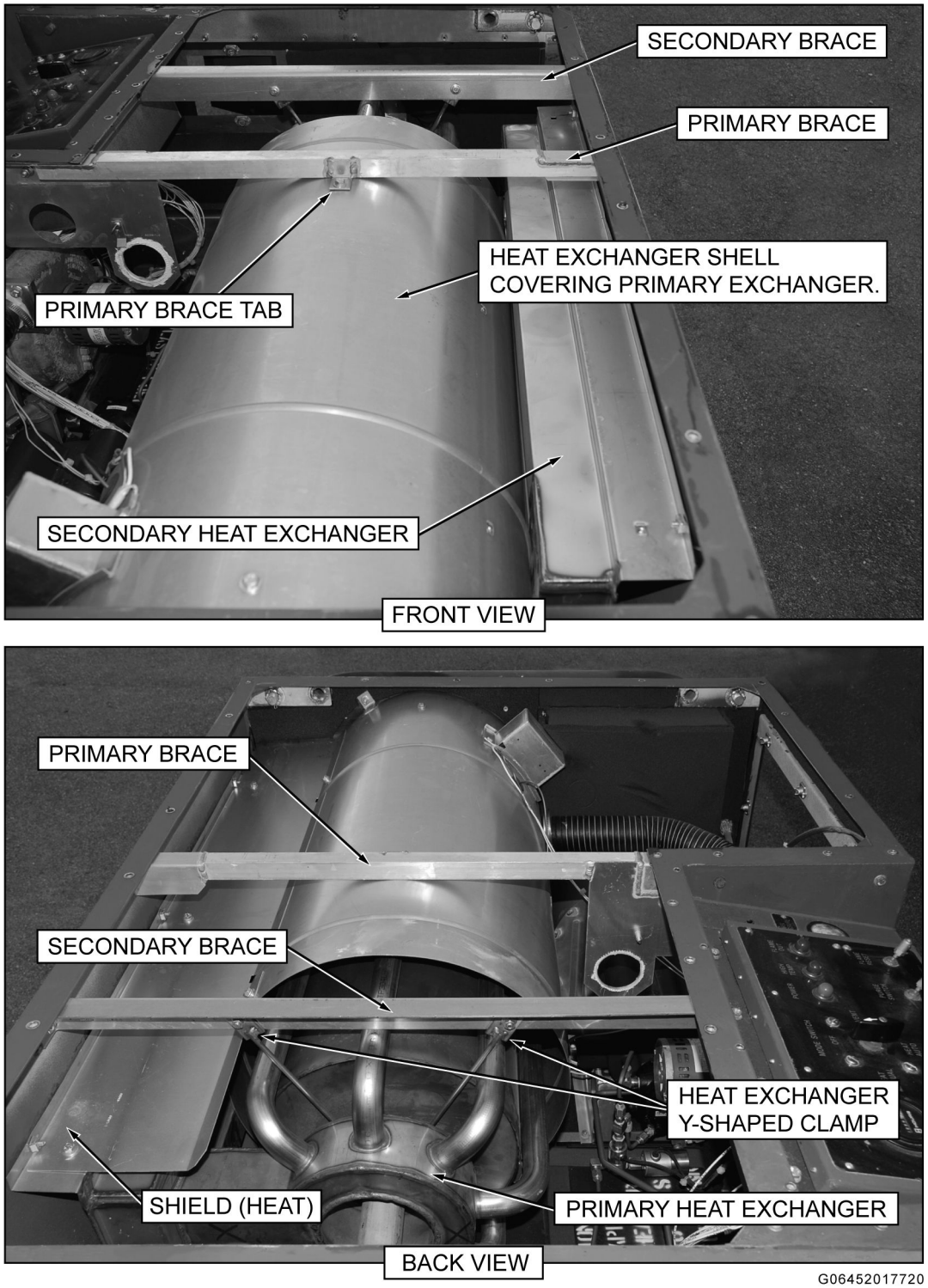


Figure 1. Heat Exchanger (Model H-120) Overview of Structural Components.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

1. Loosen the clamp (Figure 2, Item 12) and remove the air supply hose (Figure 2, Item 13) from the heat exchanger's combustion air intake (Figure 2, Item 14).
2. Remove six screws (Figure 2, Item 5), six lockwashers (Figure 2, Item 6), and six flat washers (Figure 2, Item 7) from the heat shield (Figure 2, Item 4), which frees the heat shield from the heat exchanger. Remove the heat shield and discard the lockwashers.
3. Remove the seven nuts (Figure 2, Item 11), seven lockwashers (Figure 2, Item 10), fourteen flat washers (Figure 2, Item 8) and seven bolts (Figure 2, Item 9) fastening the heat exchanger's mounting ring (Figure 2, Item 15) to the ASH frame. The front of the heat exchanger is now free of the ASH frame. Discard the lockwashers.

NOTE

The removal of these seven fasteners from the heat exchanger's mounting ring frees the front of the heat exchanger from the ASH frame, but it does not free the mounting ring from the heat exchanger.

4. Remove the six screws (Figure 2, Item 3), six lockwashers (Figure 2, Item 2) and six flat washers (Figure 2, Item 1) that secure the heat exchanger to the left side of the ASH frame. Discard the lockwashers.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

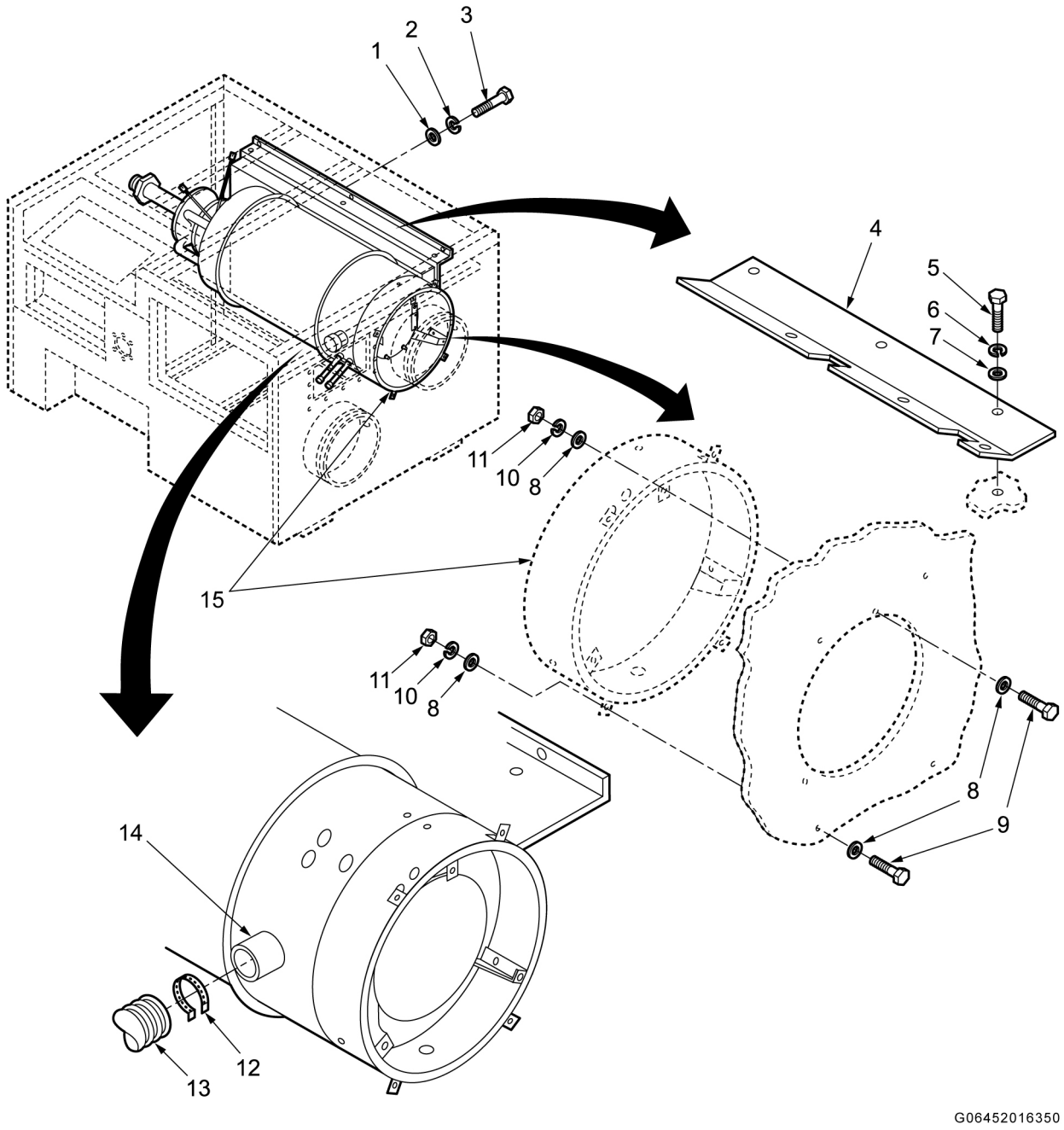


Figure 2. Heat Exchanger (Model H-120) Removal: Preparation.

5. Remove the two nuts (Figure 3, Item 1), two lockwashers (Figure 3, Item 2), four flat washers (Figure 3, Item 3) and two bolts (Figure 3, Item 5) that attach the exchanger's Y-shape clamp (Figure 3, Item 21) to the secondary brace (Figure 3, Item 4). Discard the lockwashers.
6. Remove one nut (Figure 3, Item 10), one lockwasher (Figure 3, Item 9), two flat washers (Figure 3, Item 7) and one bolt (Figure 3, Item 8) from the left side of the primary brace (Figure 3, Item 6). Discard the lockwashers.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

7. Remove one nut (Figure 3, Item 13), one lockwasher (Figure 3, Item 12), two flat washers (Figure 3, Item 11) and one bolt (Figure 3, Item 20) from the mid-right side of the primary brace (Figure 3, Item 6). Discard the lockwashers.
8. Remove the one nut (Figure 3, Item 14), one lockwasher (Figure 3, Item 15), two flat washers (Figure 3, Item 16), ground wire (Figure 3, Item 17), star lockwasher (Figure 3, Item 18), and one bolt (Figure 3, Item 19) from the far-right side of the primary brace (Figure 3, Item 6). Discard the lockwashers.
9. The primary brace is no longer fastened to the ASH frame but continues to carry the full weight of the exchanger via the primary brace tab that remains attached to the heat exchanger shell.

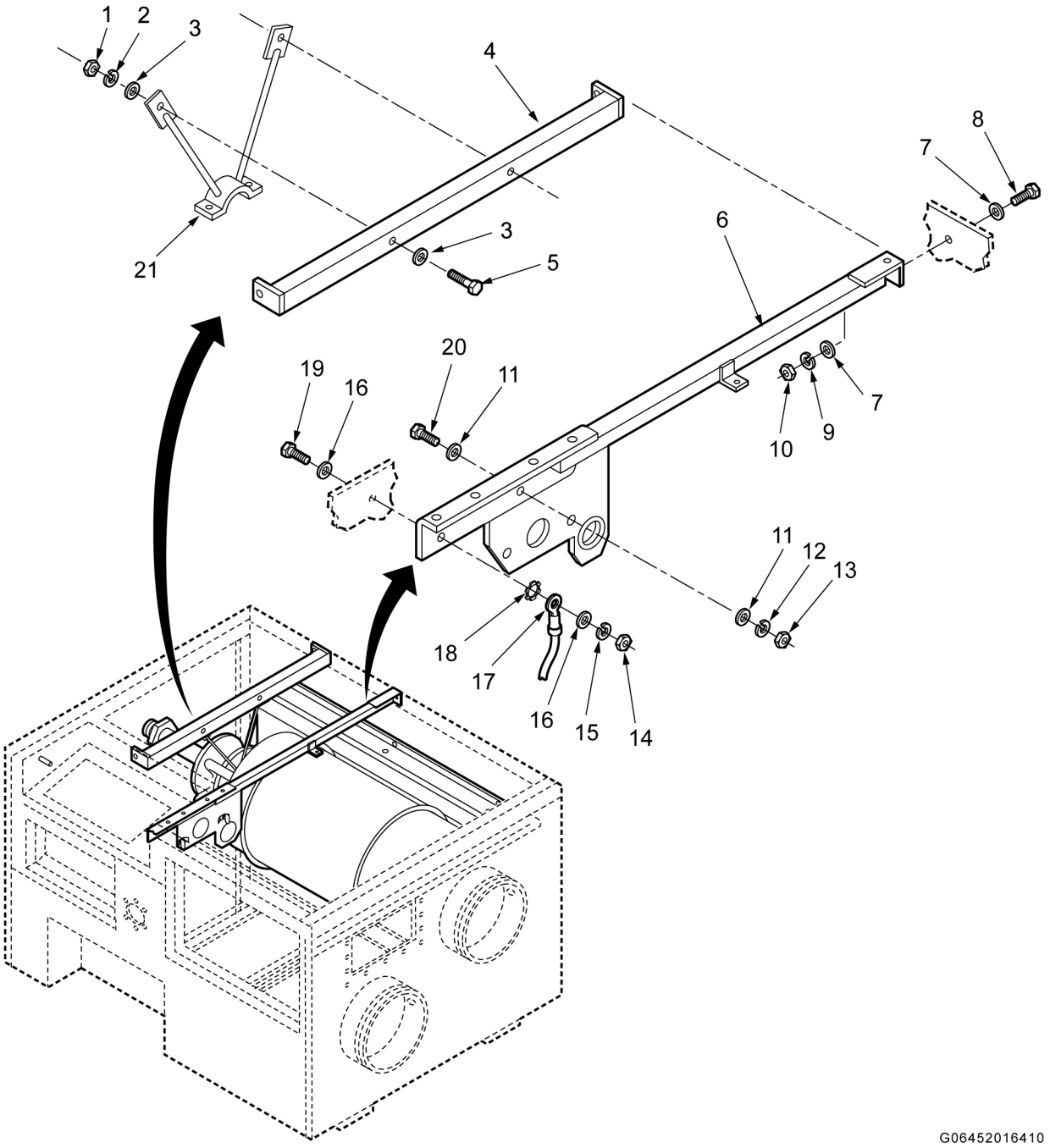


Figure 3. Heat Exchanger (Model H-120) Primary Brace Removal.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

CAUTION

Damage to the heat exchanger will result if the last support screw (Figure 4, Item 1) through the primary brace tab (Figure 4, Item 4) is removed without supporting the assembly. Support the front and rear of the heat exchanger prior to the removal of this fastener.

10. One person shall position himself to support the front end of the heat exchanger (Figure 4, Item 8) while the second person supports the back end of the heat exchanger (Figure 4, Item 9).
11. With the heat exchanger properly supported at both ends, remove the screw (Figure 4, Item 1), lockwasher (Figure 4, Item 2) and flat washer (Figure 4, Item 3) connecting the primary brace tab (Figure 4, Item 4) to the heat exchanger via the hole (Figure 4, Item 5) on top of the heat exchanger (Figure 4, Item 7). Discard the lockwasher.
12. The primary brace (Figure 4, Item 10) is now free of the exchanger and can be removed from the ASH.

WARNING

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

13. Remove the heat exchanger (Figure 4, Item 7) from the ASH by sliding it out through the back of the unit.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

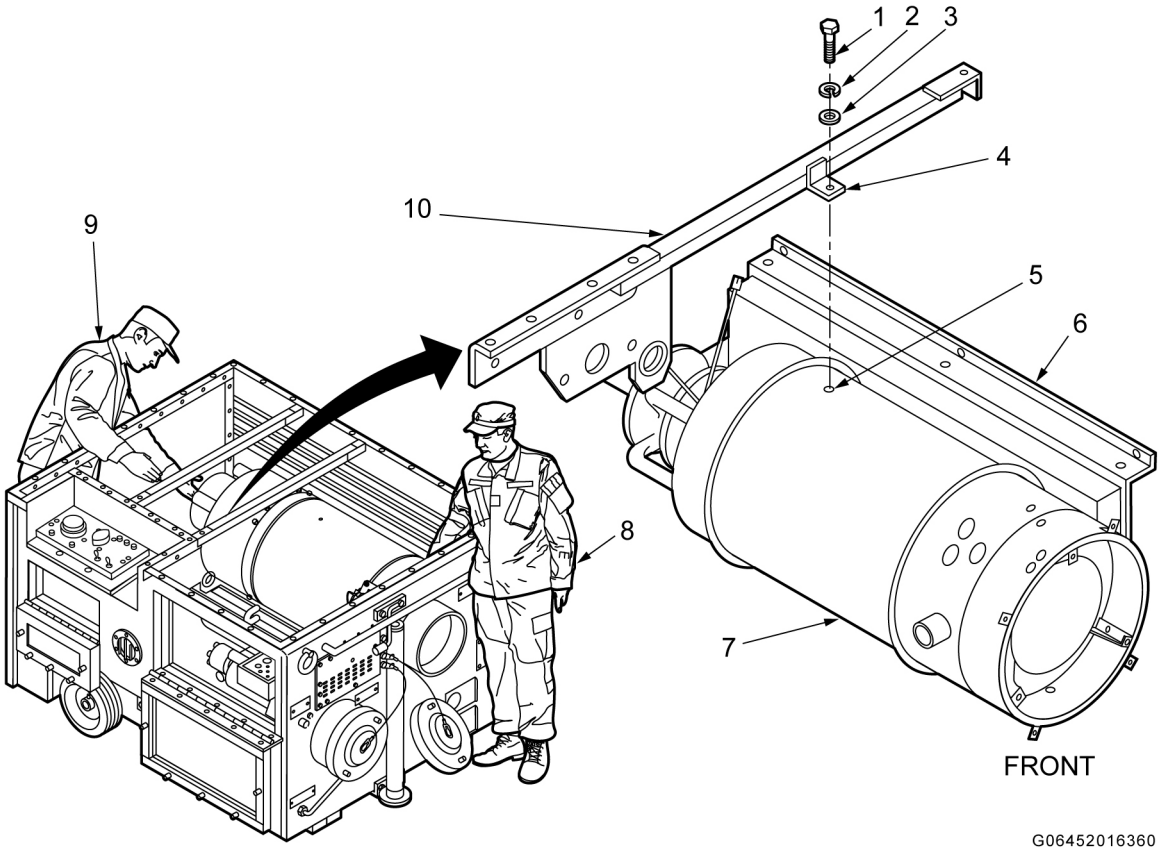


Figure 4. Heat Exchanger (Model H-120) Removal/Installation.

Installation

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in Figure 1; the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

There are two braces that are referred to in this procedure that form the top of the ASH frame. To distinguish between them, the center brace that attaches to the heat exchanger shell will be referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace will be referred to as the secondary brace and is located closer to the rear of the exchanger housing the sight glass. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and affixed to the ASH frame during the entire procedure.

These primary and secondary braces, along with the heat exchanger's other major structural components, are highlighted in the overview of the heat exchanger assembly provided by Figure 1.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

WARNING

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

1. With one person properly positioned at the front end of the heat exchanger assembly (Figure 4, Item 8) and another person positioned at the back of the exchanger assembly (Figure 4, Item 9), lift the exchanger assembly and slide it into the ASH frame through the open rear panel, making sure that the front of the exchanger assembly goes in first (Figure 4, Item 7), with the secondary heat exchanger (Figure 4, Item 6) resting against the left side of the ASH frame.
2. Install the primary brace (Figure 4, Item 10) to the heat exchanger (Figure 4, Item 7) as follows:
   a. Apply anti-seize compound to the screw (Figure 4, Item 1) and align the hole at the top of the heat exchanger (Figure 4, Item 5) with the tab (Figure 4, Item 4) on the primary brace (Figure 4, Item 10).
   b. With the brace tab and exchanger hole aligned, install the screw (Figure 4, Item 1), new lockwasher (Figure 4, Item 2), and flat washer (Figure 4, Item 3) through the primary brace tab (Figure 4, Item 4) into the hole at the top of the heat exchanger (Figure 4, Item 5). Hand tighten only.
3. Install the primary brace (Figure 5, Item 6) (now attached to the heat exchanger) in the ASH frame as follows:
   a. Install two flat washers (Figure 5, Item 7), bolt (Figure 5, Item 8), new lockwasher (Figure 5, Item 9) and nut (Figure 5, Item 10) to secure the left end of the primary brace (Figure 5, Item 6) to the ASH frame.
   b. Install two flat washers (Figure 5, Item 16), bolt (Figure 5, Item 19), star lockwasher (Figure 5, Item 18), ground lead (Figure 5, Item 17), new lockwasher (Figure 5, Item 15), and nut (Figure 5, Item 14) to secure the far right end of the primary brace (Figure 5, Item 6) to the ASH frame.
   c. Install two flat washers (Figure 5, Item 11), one bolt (Figure 5, Item 20), one new lockwasher (Figure 5, Item 12), and one nut (Figure 5, Item 13) to secure the mid-right end of the primary brace (Figure 5, Item 6) to the ASH frame.
4. Install four flat washers (Figure 5, Item 3), two bolts (Figure 5, Item 5), two new lockwashers (Figure 5, Item 2) and two nuts (Figure 5, Item 1) to attach the heat exchanger's Y-shaped clamp (Figure 5, Item 21) to the secondary brace (Figure 5, Item 4).

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

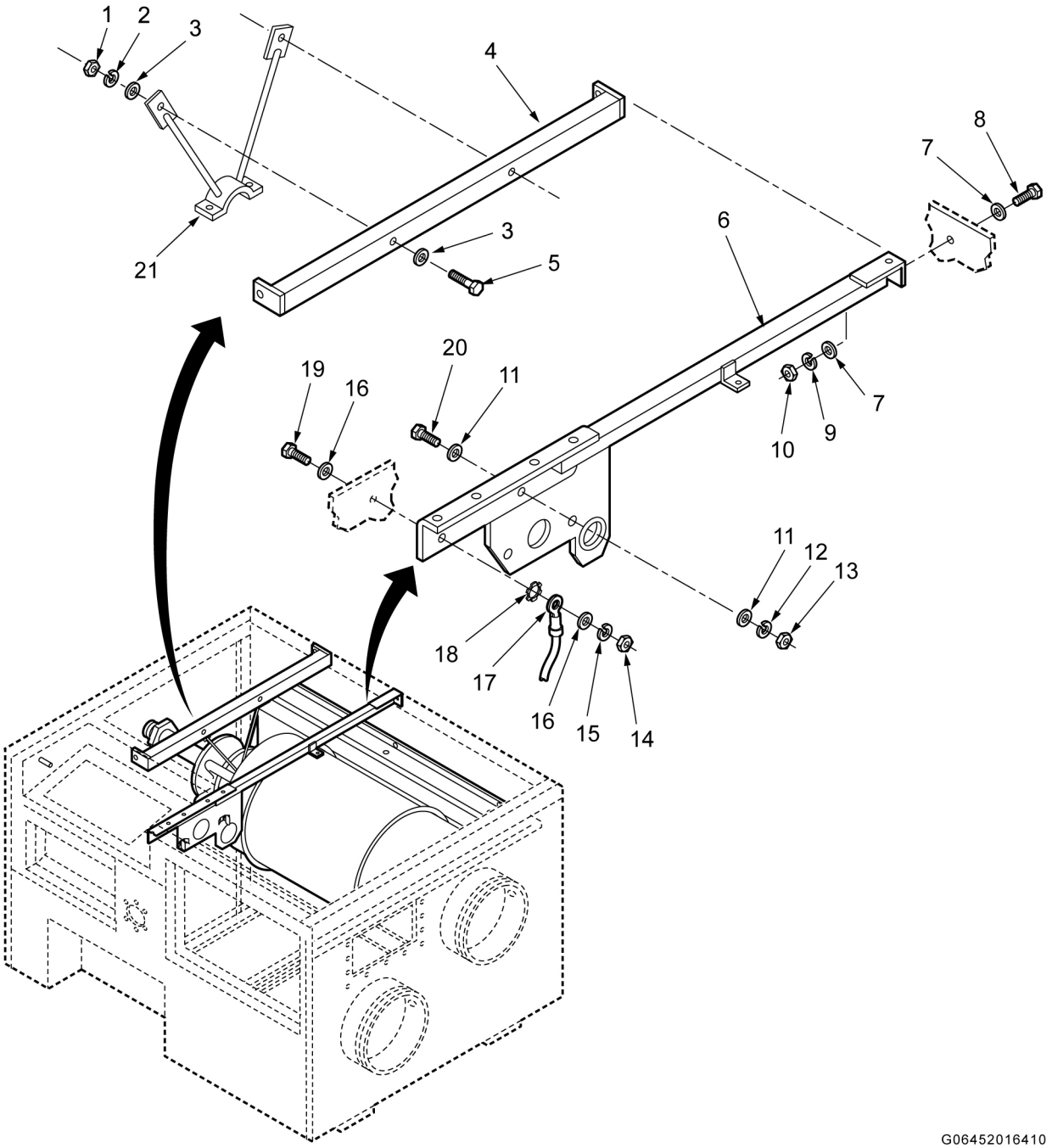


Figure 5. Heat Exchanger (Model H-120) Installation: Primary Brace & Clamp.

5. Apply anti-seize compound to the six screws (Figure 6, Item 3) in preparation for use on the ASH frame.
6. Install six flat washers (Figure 6, Item 1), six new lockwashers (Figure 6, Item 2), and six screws (Figure 6, Item 3) to secure the secondary heat exchanger to the left side of the ASH frame. Hand tighten only.
7. Align the mounting ring holes on the front of the heat exchanger (Figure 6, Item 13) with the holes on the front of the ASH frame surrounding the air supply outlet (Figure 6, Item 8).
8. Install 14 flat washers (Figure 6, Item 9), seven bolts (Figure 6, Item 10), seven new lockwashers (Figure 6, Item 11), and seven nuts (Figure 6, Item 12) to secure the front of the heat exchanger mounting ring (Figure 6, Item 13) to the front of the ASH frame at the air supply outlet (Figure 6, Item 8).

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

9. The heat exchanger is now fastened to the ASH frame via the two braces, the side fasteners, and the mounting ring. Return to check the integrity of these connections and tighten securely all hardware previously hand tightened in Steps 2 and 6 above.
10. Apply anti-seize compound to the six screws (Figure 6, Item 5) in preparation for their use on the heat shield.
11. Install the heat shield (Figure 6, Item 4), six flat washers (Figure 6, Item 7), six new lockwashers (Figure 6, Item 6) and six screws (Figure 6, Item 5) to secure the heat shield to the heat exchanger.

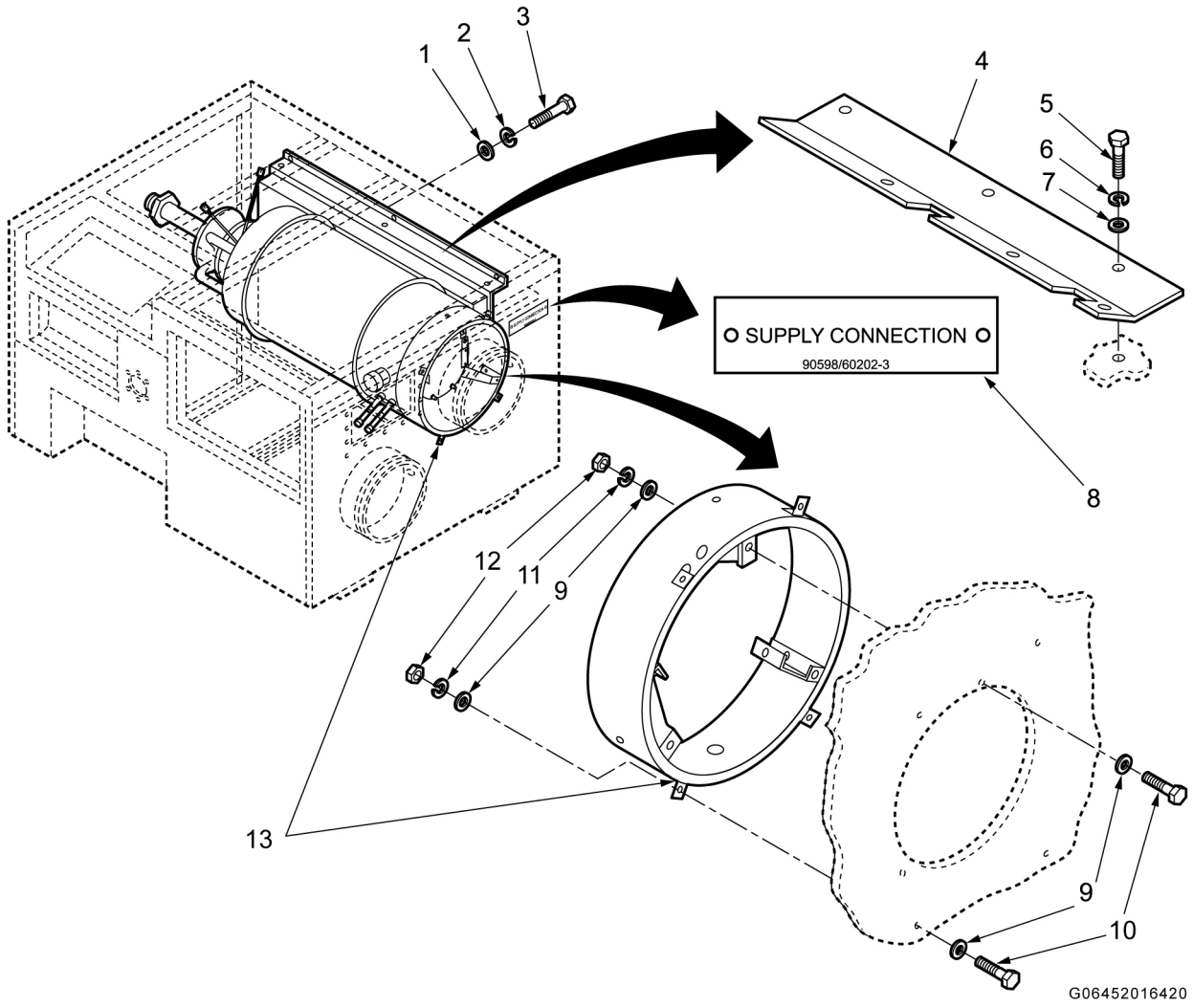


Figure 6. Heat Exchanger (Model H-120) Installation: Mounting Ring & Heat Shield.

12. Tighten securely the four bolts (Figure 7, Item 5) and four nuts (Figure 7, Item 4) that were previously installed (hand tight) on the two clamps (Figure 7, Item 3) on tubes No. 5 and No. 7 in the rear of the heat exchanger.
13. Tighten securely the two bolts (Figure 7, Item 1) and two nuts (Figure 7, Item 9) that were previously installed (hand tight) on the Y-shaped clamp (Figure 7, Item 2) on the back of the heat exchanger.
14. Connect the combustion air supply hose (Figure 7, Item 7) to the exchanger's combustion air intake (Figure 7, Item 8) and install a clamp (Figure 7, Item 6) to secure the connection.

HEAT EXCHANGER MODEL H-120 REPLACEMENT - (CONTINUED)

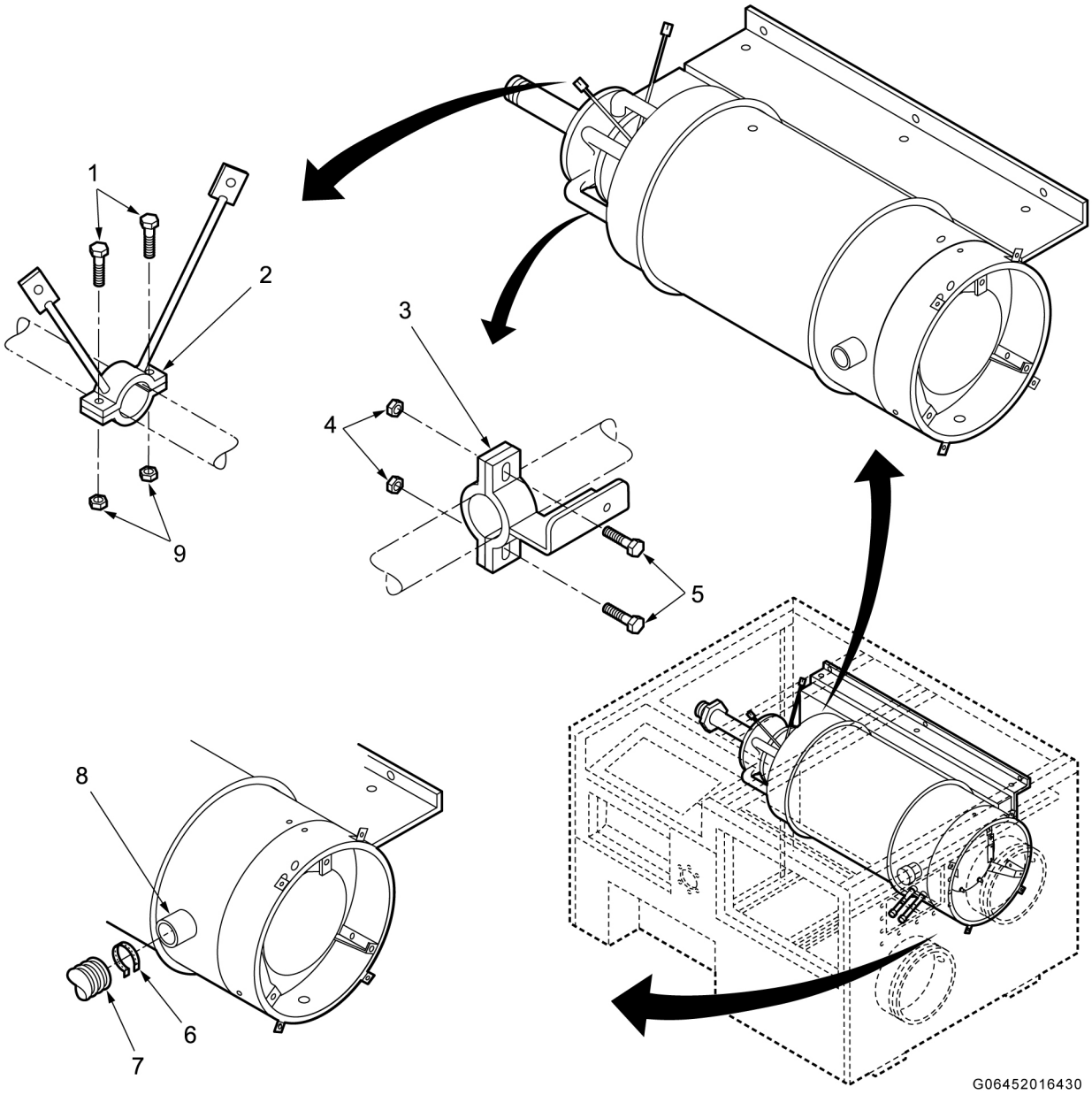


Figure 7. Heat Exchanger (Model H-120) Installation: Hoses & Clamps.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Gloves, Heat-Protective (WP 0116, Item 5)
Lockwasher (WP 0100, Figure 25, Item 3)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (2)

Equipment Condition
ASH disconnected from power source
Burner assembly removed, WP 0042
Control box cover removed, WP 0018
Jack assembly removed, WP 0046
Rear panel removed, WP 0020
Supply air duct cover removed, WP 0022
Supply air screen removed, WP 0023
Top panel removed, WP 0019
Transformer assembly removed, WP 0040, WP 0041

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

Insulation should only be removed when necessary to gain access to another component or when replacement of the insulation is necessary.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT

Removal

A precondition for the removal of the heat exchanger assembly from the ASH frame is the removal of the top and rear panels to provide access since the exchanger will be removed from the ASH in that direction. Refer to WP 0019 and WP 0020 for instructions on the proper method of removing the top and rear panels.

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in Figure 1; the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

There are two braces that are referred to in this procedure that form the top of the ASH frame. To distinguish between them, the center brace that attaches to the heat exchanger shell will be referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace will be referred to as the secondary brace and is located closer to the rear of the exchanger housing the sight

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

glass. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and affixed to the ASH frame during the entire procedure.

These primary and secondary braces, along with the heat exchanger's other major structural components, are highlighted in the overview of the heat exchanger assembly provided by Figure 1.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

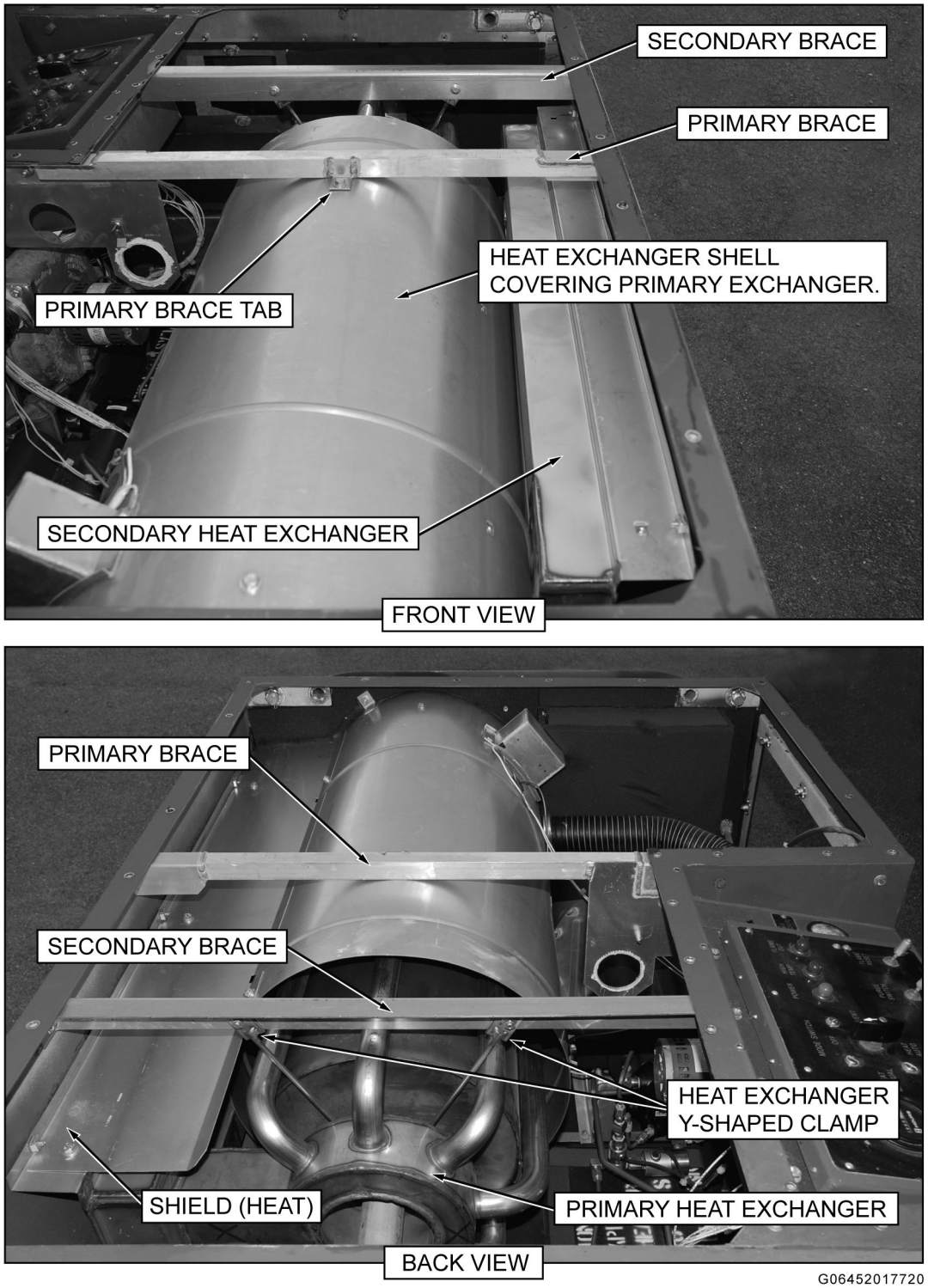


Figure 1. Heat Exchanger (Model H-120-1) Overview of Structural Components.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

1. Loosen the clamp (Figure 2, Item 12) and remove the air supply hose (Figure 2, Item 13) from the heat exchanger's combustion air intake (Figure 2, Item 14).
2. Remove six screws (Figure 2, Item 5), six lockwashers (Figure 2, Item 6), and six flat washers (Figure 2, Item 7) from the heat shield (Figure 2, Item 4), which frees the heat shield to be removed from the heat exchanger. Discard the lockwashers.
3. Remove the seven nuts (Figure 2, Item 11), seven lockwashers (Figure 2, Item 10), fourteen flat washers (Figure 2, Item 8) and seven bolts (Figure 2, Item 9) fastening the heat exchanger's mounting ring (Figure 2, Item 15) to the ASH frame. The front of the heat exchanger is now free of the ASH frame. Discard the lockwashers.

NOTE

The removal of these seven fasteners from the heat exchanger's mounting ring frees the front of heat exchanger from the ASH frame, but it does not free the mounting ring from the heat exchanger.

4. Remove the six screws (Figure 2, Item 3), six lockwashers (Figure 2, Item 2) and six flat washers (Figure 2, Item 1) that secure the heat exchanger to the left side of the ASH frame. Discard the lockwashers.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

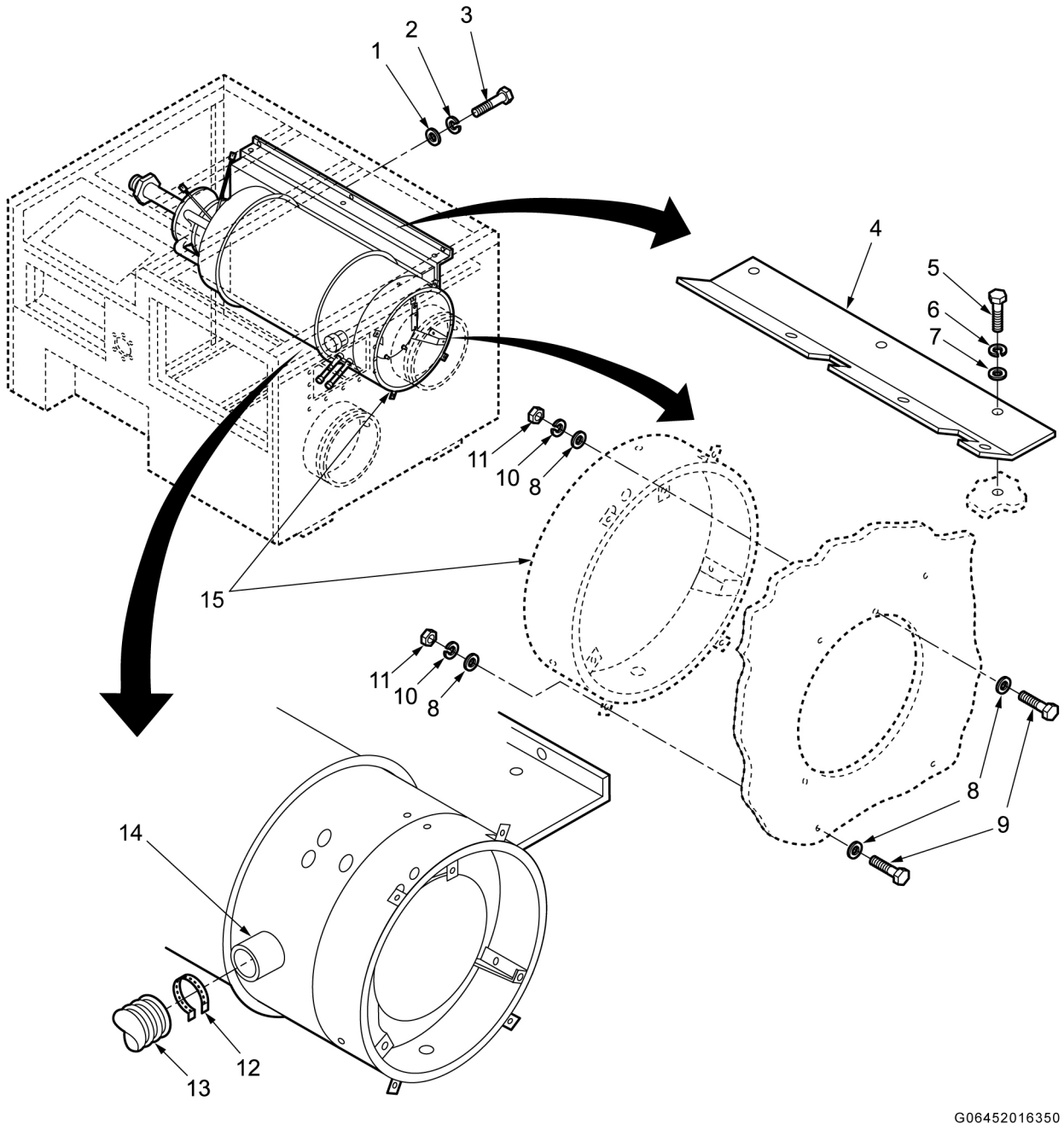


Figure 2. Heat Exchanger (Model H-120-1) Removal: Preparation.

5. Remove the two nuts (Figure 3, Item 1), two lockwashers (Figure 3, Item 2), four flat washers (Figure 3, Item 3) and two bolts (Figure 3, Item 5) that attach the exchanger's Y-shape clamp (Figure 3, Item 21) to the secondary brace (Figure 3, Item 4). Discard the lockwashers.
6. Remove one nut (Figure 3, Item 10), one lockwasher (Figure 3, Item 9), two flat washers (Figure 3, Item 7) and one bolt (Figure 3, Item 8) from the left side of the primary brace (Figure 3, Item 6). Discard the lockwashers.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

7. Remove one nut (Figure 3, Item 13), one lockwasher (Figure 3, Item 12), two flat washers (Figure 3, Item 11) and one bolt (Figure 3, Item 20) from the mid-right side of the primary brace (Figure 3, Item 6). Discard the lockwashers.
8. Remove the one nut (Figure 3, Item 14), one lockwasher (Figure 3, Item 15), two flat washers (Figure 3, Item 16), ground wire (Figure 3, Item 17), star lockwasher (Figure 3, Item 18), and one bolt (Figure 3, Item 19) from the far-right side of the primary brace (Figure 3, Item 6). Discard the lockwashers.
9. The primary brace is no longer fastened to the ASH frame but continues to carry the full weight of the exchanger via the primary brace tab that remains attached to the heat exchanger shell.

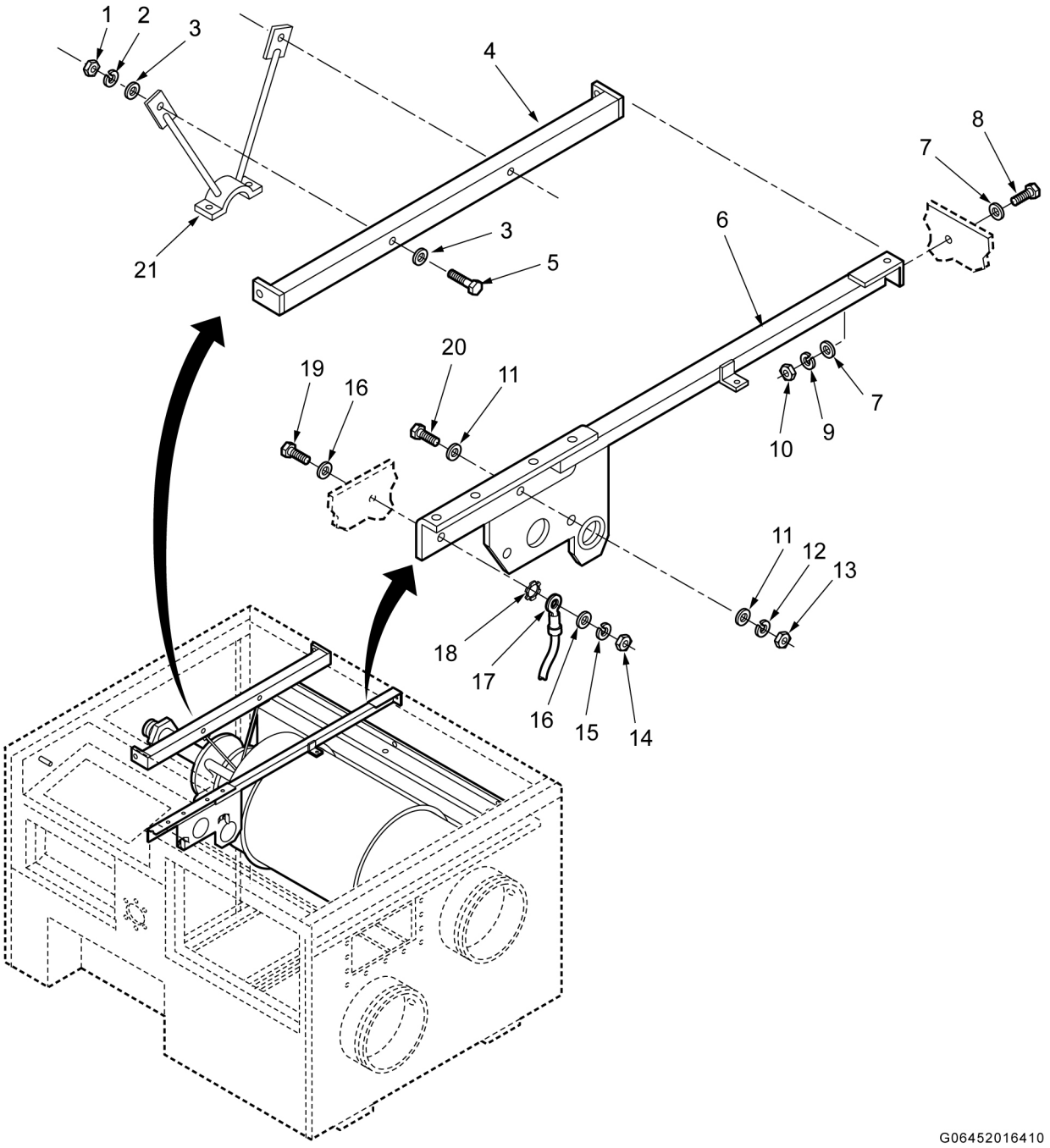


Figure 3. Heat Exchanger (Model H-120-1) Primary Brace Removal.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

10. One person shall position himself to support the front end of the heat exchanger (Figure 4, Item 8) while the second person supports the back end of the heat exchanger (Figure 4, Item 9).

CAUTION

Damage to the heat exchanger will result if the last support screw (Figure 4, Item 1) through the primary brace tab (Figure 4, Item 4) is removed without supporting the assembly. Support the front and back of the heat exchanger prior to the removal of this fastener.

11. With the heat exchanger properly supported at both ends, remove the screw (Figure 4, Item 1), lockwasher (Figure 4, Item 2), and flat washer (Figure 4, Item 3) connecting the primary brace tab (Figure 4, Item 4) to the heat exchanger (Figure 4, Item 7) via the hole (Figure 4, Item 5) at the top of the heat exchanger. Discard the lockwasher.
12. The primary brace (Figure 4, Item 10) is now free of the exchanger and can be removed from the ASH.

WARNING

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

13. Remove the heat exchanger (Figure 4, Item 7) from the ASH by sliding it out through the back of the unit.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

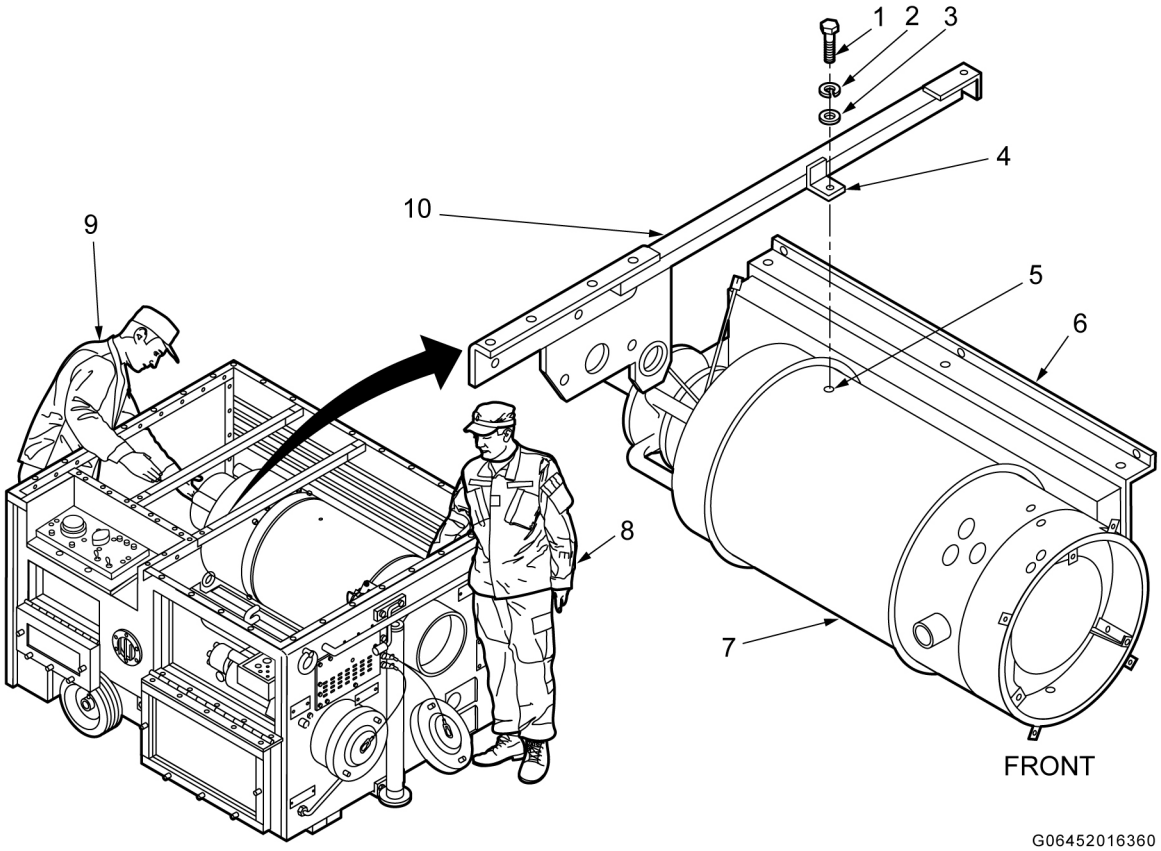


Figure 4. Heat Exchanger (Model H-120-1) Removal/Installation.

Installation

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in Figure 1; the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

There are two braces that are referred to in this procedure that form the top of the ASH frame. To distinguish between them, the center brace that attaches to the heat exchanger shell will be referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace will be referred to as the secondary brace and is located closer to the rear of the exchanger housing the sight glass. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and affixed to the ASH frame during the entire procedure.

These primary and secondary braces, along with the heat exchanger's other major structural components, are highlighted in the overview of the heat exchanger assembly provided by Figure 1.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

WARNING

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

1. With one person properly positioned at the front end of the heat exchanger assembly (Figure 4, Item 8) and another person positioned at the back of the exchanger assembly (Figure 4, Item 9), lift the exchanger assembly and slide it into the ASH frame through the open rear panel, making sure that the front of the exchanger assembly (Figure 4, Item 7) goes in first, with the secondary heat exchanger (Figure 4, Item 6) resting against the left side of the ASH frame.
2. Install the primary brace (Figure 4, Item 10) on the heat exchanger (Figure 4, Item 7) as follows:
   a. Apply anti-seize compound to the screw (Figure 4, Item 1) and align the hole at the top of the heat exchanger (Figure 4, Item 5) with the tab (Figure 4, Item 4) on the primary brace (Figure 4, Item 10).
   b. With the brace tab and exchanger hole aligned, install the screw (Figure 4, Item 1), new lockwasher (Figure 4, Item 2), and flat washer (Figure 4, Item 3) through the primary brace tab (Figure 4, Item 4) into the hole at the top of the heat exchanger (Figure 4, Item 5). Hand tighten only.
3. Install the primary brace (Figure 5, Item 6) (now attached to the heat exchanger) to the ASH frame as follows:
   a. Install two flat washers (Figure 5, Item 7), bolt (Figure 5, Item 8), new lockwasher (Figure 5, Item 9), and nut (Figure 5, Item 10) to secure the left end of the primary brace (Figure 5, Item 6) to the ASH frame.
   b. Install two flat washers (Figure 5, Item 16), bolt (Figure 5, Item 19), star lockwasher (Figure 5, Item 18), ground lead (Figure 5, Item 17), new lockwasher (Figure 5, Item 15), and nut (Figure 5, Item 14) to secure the far right side of the primary brace (Figure 5, Item 6) to the ASH frame.
   c. Install two flat washers (Figure 5, Item 11), one bolt (Figure 5, Item 20), one new lockwasher (Figure 5, Item 12), and one nut (Figure 5, Item 13) to secure the mid-right side of the primary brace (Figure 5, Item 6) to the ASH frame.
4. Install four flat washers (Figure 5, Item 3), two bolts (Figure 5, Item 5), two new lockwashers (Figure 5, Item 2) and two nuts (Figure 5, Item 1) to attach the heat exchanger's Y-shaped clamp (Figure 5, Item 21) to the secondary brace (Figure 5, Item 4).

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

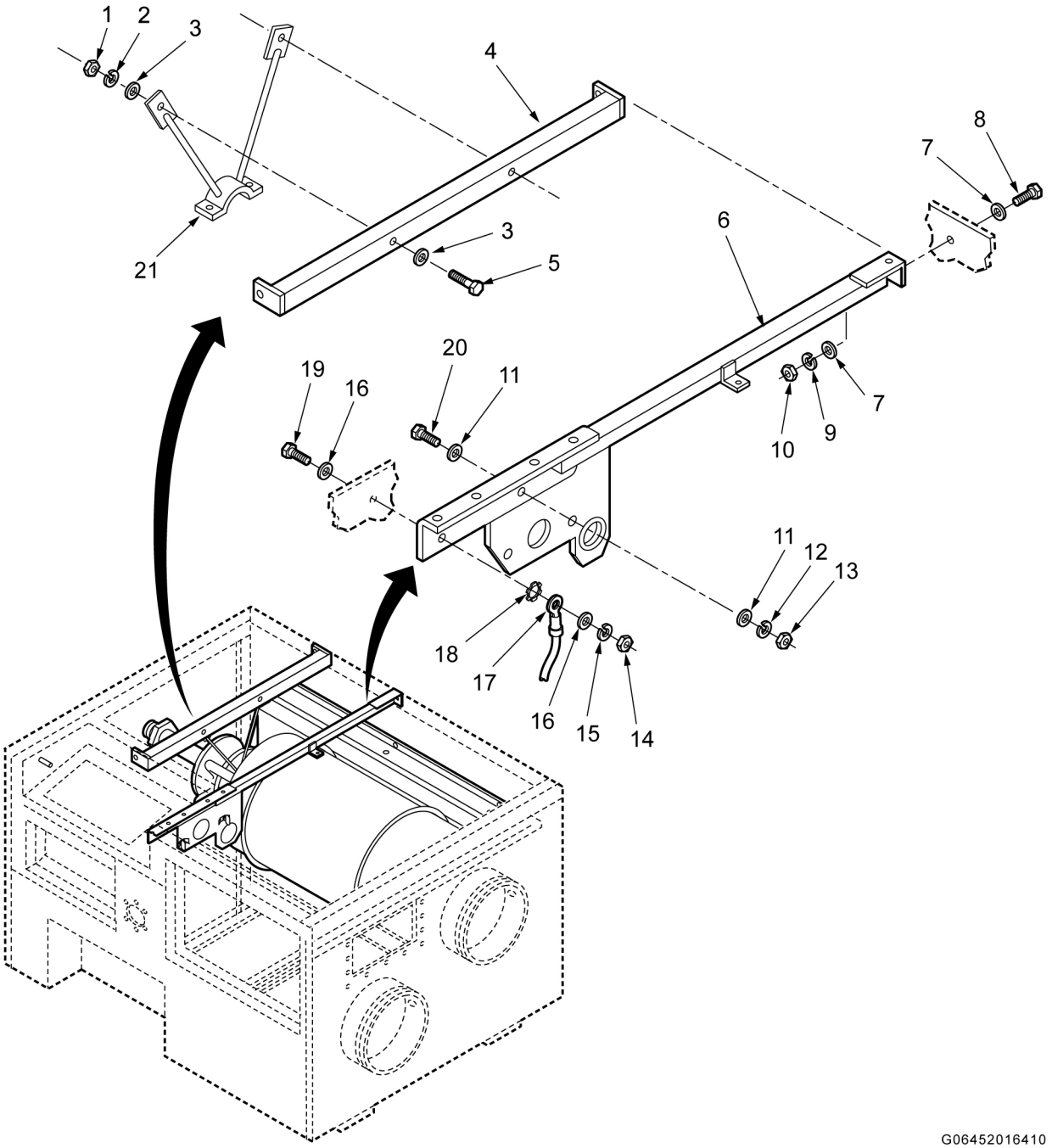


Figure 5. Heat Exchanger (Model H-120-1) Installation: Primary Brace & Clamp.

5. Apply anti-seize compound to the six screws (Figure 6, Item 3) in preparation for use on the ASH frame.
6. Install six flat washers (Figure 6, Item 1), six new lockwashers (Figure 6, Item 2), and six screws (Figure 6, Item 3) to secure the secondary heat exchanger to the left side of the ASH frame. Hand tighten only.
7. Align the mounting ring holes on the front of the heat exchanger (Figure 6, Item 13) with holes on the front of the ASH frame surrounding the air supply outlet (Figure 6, Item 8).
8. Install 14 flat washers (Figure 6, Item 9), seven bolts (Figure 6, Item 10), seven new lockwashers (Figure 6, Item 11), and seven nuts (Figure 6, Item 12) to secure the front of the heat exchanger mounting ring (Figure 6, Item 13) to the front of the ASH frame at the air supply outlet (Figure 6, Item 8).

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

9. The heat exchanger is now fastened to the ASH frame via the two braces, the side fasteners, and the mounting ring. Return to check the integrity of these connections and tighten securely all hardware previously hand tightened in Steps 2 and 6 above.
10. Apply anti-seize compound to the six screws (Figure 6, Item 5) in preparation for their use on the heat shield.
11. Install the heat shield (Figure 6, Item 4), six flat washers (Figure 6, Item 7), six new lockwashers (Figure 6, Item 6) and six screws (Figure 6, Item 5) to secure the heat shield to the heat exchanger assembly.

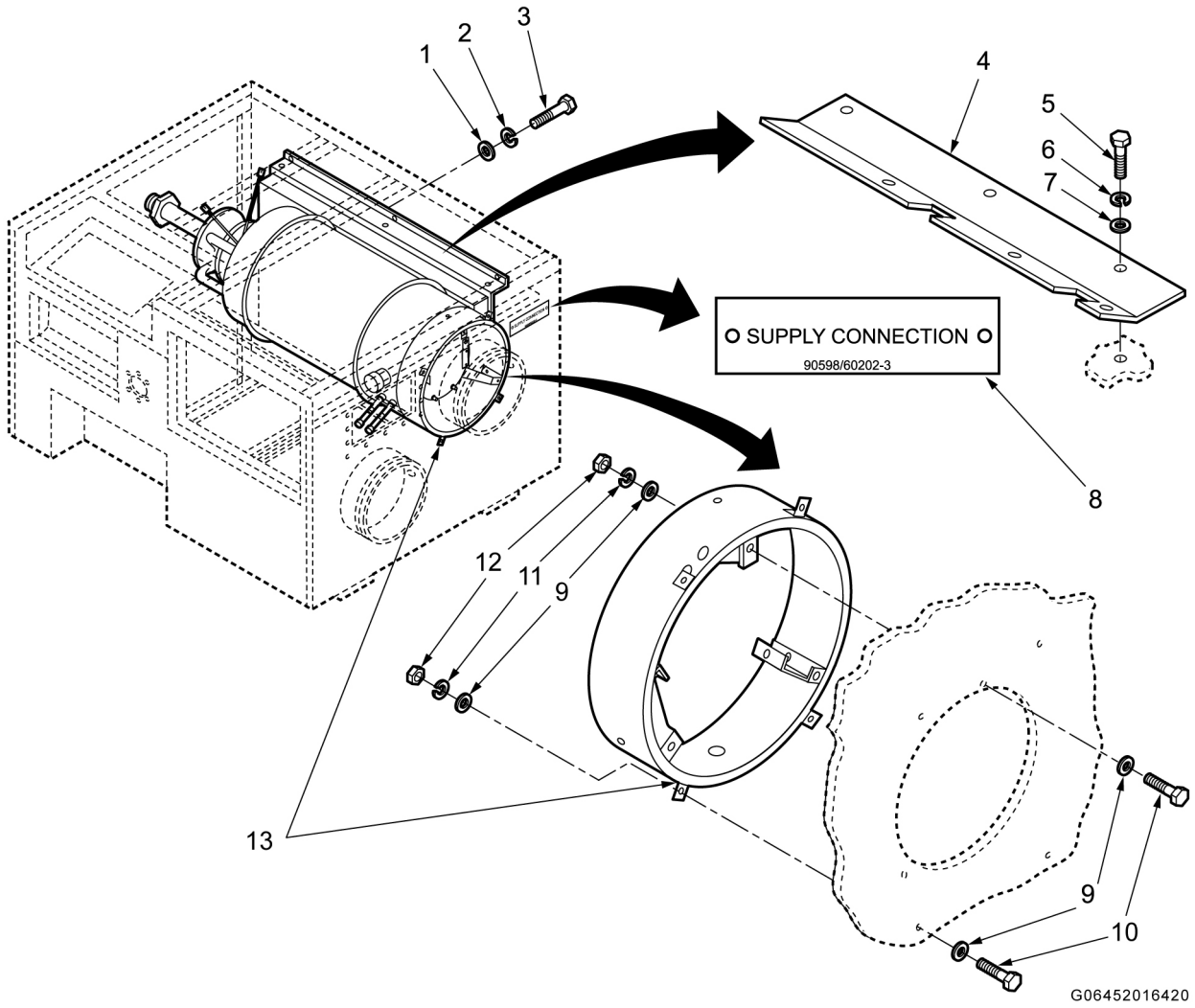


Figure 6. Heat Exchanger (Model H-120-1) Installation: Mounting Ring & Heat Shield.

12. Tighten securely the four bolts (Figure 7, Item 5) and four nuts (Figure 7, Item 4) on the two clamps (Figure 7, Item 3) that were previously installed (hand tight) on tubes No. 5 and No. 7 in the back of the heat exchanger.
13. Tighten securely the two bolts (Figure 7, Item 1) and two nuts (Figure 7, Item 9) that were previously installed (hand tight) on the Y-shaped clamp (Figure 7, Item 2) on the back of the heat exchanger.
14. Connect the combustion fan air supply hose (Figure 7, Item 7) to the exchanger's combustion air intake (Figure 7, Item 8) and install a clamp (Figure 7, Item 6) to secure the connection.

HEAT EXCHANGER MODEL H-120-1 REPLACEMENT - (CONTINUED)

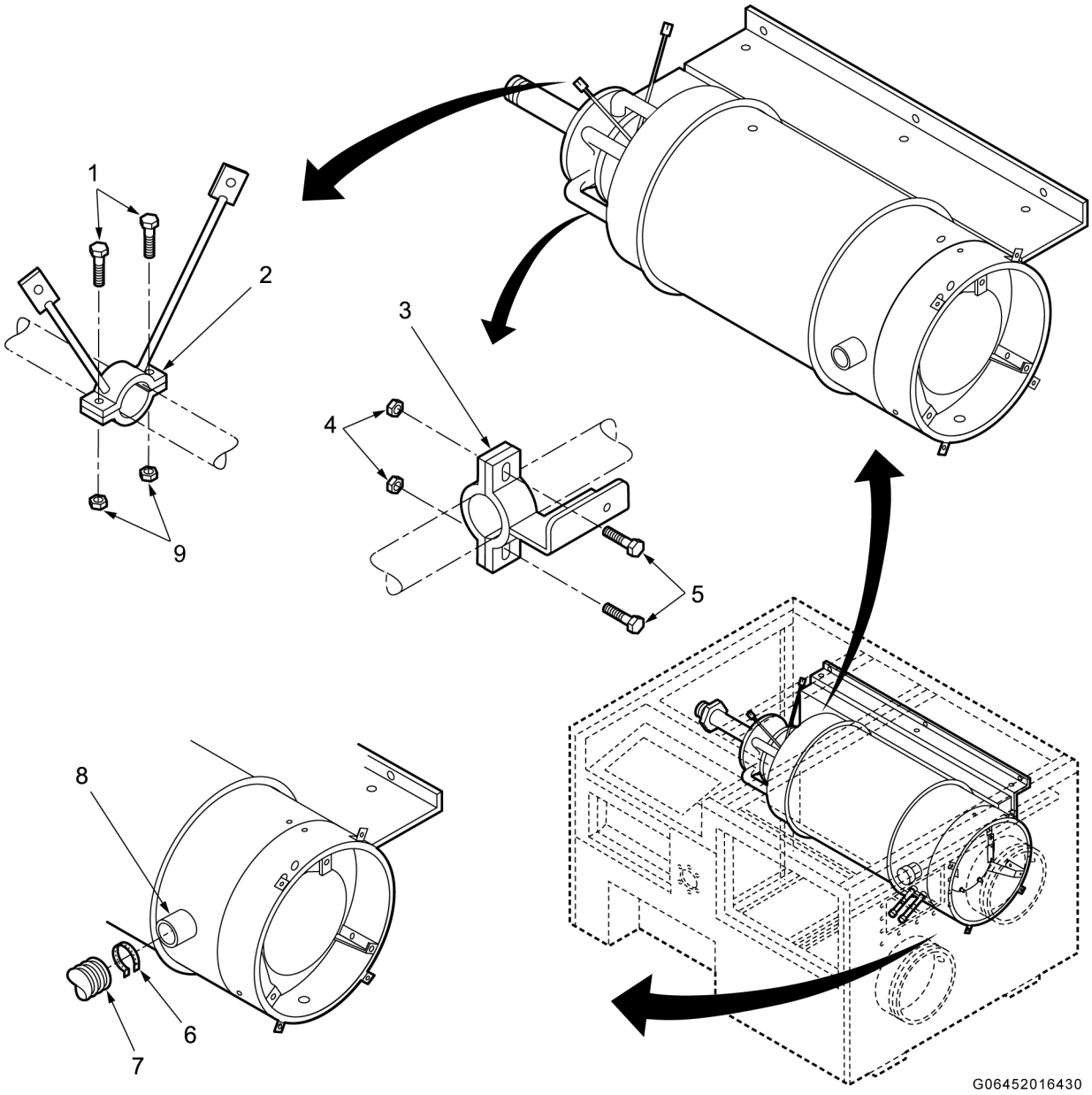


Figure 7. Heat Exchanger (Model H-120-1) Installation: Hoses & Clamps.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

THERMOSTAT ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0100, Figure 26, Item 2)
Lockwasher (WP 0100, Figure 26, Item 8)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Supply air duct cover removed, WP 0022
Supply outlet screen removed, WP 0023

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

THERMOSTAT ASSEMBLY REPLACEMENT

Removal

1. Open the right-side rear door (Figure 1, Item 17) on the ASH to gain access to the terminal board.
2. Tag and disconnect wires (Figure 1, Item 11), (Figure 1, Item 10), (Figure 1, Item 9), (Figure 1, Item 8) and (Figure 1, Item 7) from terminal board TB3 as follows:
   a. Disconnect wire S2-3 (Figure 1, Item 11) from TB3-9.
   b. Disconnect wire S2-2 (Figure 1, Item 10) from TB3-10.
   c. Disconnect wire S2-1 (Figure 1, Item 9) from TB3-8.
   d. Disconnect wire S3-1 (Figure 1, Item 8) from TB3-4.
   e. Disconnect wire S3-3 (Figure 1, Item 7) from TB3-5.
3. Reconnect any other wires that may have been disconnected at shared terminal points to gain access to the above specified wires.
4. Remove wire tie-down straps (Figure 1, Item 15), as required.
5. Remove the two nuts (Figure 1, Item 4), two lockwashers (Figure 1, Item 3) and two flat washers (Figure 1, Item 2) that attach the thermostat bracket (Figure 1, Item 5) to the cover plate (Figure 1, Item 1). The removal of these fasteners frees the bracket from the cover plate – with wires still attached. Discard the lockwashers.
6. Remove the bracket carefully since wires (Figure 1, Item 6) remain attached to the bracket via the thermostat and limit switch.
7. Remove the grommet (Figure 1, Item 14) from the hole at the bottom of the heat exchanger mounting ring (Figure 1, Item 13).
8. Remove the wiring harness (Figure 1, Item 6) that passes through this mounting ring orifice (Figure 1, Item 13) to reach the thermostat bracket (Figure 1, Item 5). Note that this wiring harness(Figure 1, Item 6) is the other end of the same five wires (Figure 1, Item 12) disconnected from the terminal board in Step 2 above.

THERMOSTAT ASSEMBLY REPLACEMENT - (CONTINUED)

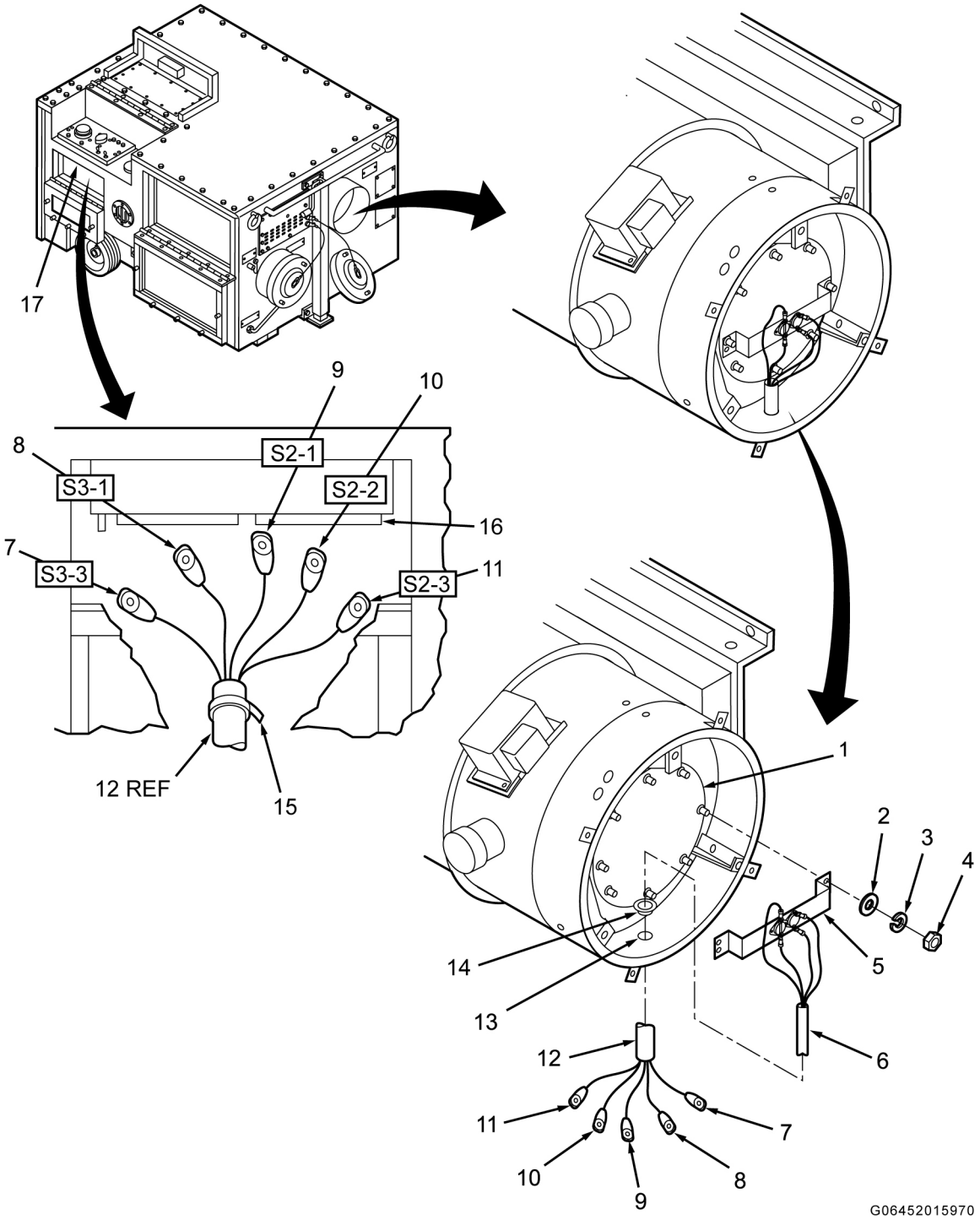


Figure 1. Thermostat Assembly Removal/Installation.

Installation

1. Install the grommet (Figure 1, Item 14) in the hole at the bottom of the mounting ring (Figure 1, Item 13).
2. Insert wiring harness (Figure 1, Item 6), consisting of wires (Figure 1, Item 7), (Figure 1, Item 8), (Figure 1, Item 9), (Figure 1, Item 10), and (Figure 1, Item 11), through the grommet (Figure 1, Item 14) in the hole at the bottom of the mounting ring (Figure 1, Item 13).

THERMOSTAT ASSEMBLY REPLACEMENT - (CONTINUED)

NOTE

Mount the thermostat bracket using appropriate bracket holes and cover plate studs that allow the bracket to be parallel to the base of the ASH. Typically, this is best achieved by mounting the bracket on the cover plate studs at the 3 o'clock and 9 o'clock positions.

3. Install the bracket (Figure 1, Item 5), two flat washers (Figure 1, Item 2), two lockwashers (Figure 1, Item 3), and two nuts (Figure 1, Item 4) on the cover plate (Figure 1, Item 1), ensuring that the bottom of the bracket is parallel to the base of the ASH.
4. Connect the wiring harness (Figure 1, Item 12), consisting of wires (Figure 1, Item 7), (Figure 1, Item 8), (Figure 1, Item 9), (Figure 1, Item 10), and (Figure 1, Item 11), to terminal board TB3 (Figure 1, Item 16) as follows:
   a. Connect discharge air thermostat (DAT) wire S3-3 (Figure 1, Item 7) to TB3-5.
   b. Connect DAT wire S3-1 (Figure 1, Item 8) to TB3-4.
   c. Connect temperature limit switch (TLS) wire S2-1 (Figure 1, Item 9) to TB3-8.
   d. Connect TLS wire S2-2 (Figure 1, Item 10) to TB3-10.
   e. Connect TLS wire S2-3 (Figure 1, Item 11) to TB3-9.
5. Install wire tie-down straps (Figure 1, Item 15), as required.
6. Close the right-side rear door (Figure 1, Item 17) on the ASH.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TRANSFORMER ASSEMBLY (MODEL H-120) REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Heat Gun (Shop Set, Electrical Repair Kit) (WP 0117, Item 15)
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket (WP 0084, Figure 12)
Gasket (WP 0084, Figure 13)
Heat Shrink Tubing (WP 0118, Item 9)
Lockwasher (WP 0100, Figure 28, Item 3)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Top panel removed, WP 0019
Duct cover removed, WP 0022
Supply outlet screen removed, WP 0023

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

The Model H-120 transformer assembly (Figure 1, Item 17) consists of two components, the transformer (Figure 1, Item 15) and the transformer cover (Figure 1, Item 16). This transformer assembly model has the filter attached to the side of the cover, as noted in the first illustration (Figure 1, Item 16).

TRANSFORMER ASSEMBLY (MODEL H-120) REPLACEMENT

Removal

1. Tag and disconnect wire TB1-8/F1-BLK (Figure 1, Item 1) and wire F1-WHT/TB1-3 (Figure 1, Item 2) from Terminal Board 1 (TB1) (Figure 1, Item 23).
2. Remove two nuts (Figure 1, Item 18), two lockwashers (Figure 1, Item 19), two bolts (Figure 1, Item 22), ground wire (Figure 1, Item 21) and two flat washers (Figure 1, Item 20) from the transformer assembly (Figure 1, Item 17). This frees the transformer cover (Figure 1, Item 16) from the transformer (Figure 1, Item 15) and the transformer assembly (Figure 1, Item 17) from the base plate (Figure 1, Item 13). Discard the lockwashers.
3. Lift the transformer assembly (Figure 1, Item 17) away from the base plate (Figure 1, Item 13), remove the two heat shrink tubes (Figure 1, Item 14) and disconnect the two high-tension leads (Figure 1, Item 11). Discard the heat shrink tubes.

TRANSFORMER ASSEMBLY (MODEL H-120) REPLACEMENT - (CONTINUED)

4. Remove the eight nuts (Figure 1, Item 8), eight lockwashers (Figure 1, Item 7), and eight flat washers (Figure 1, Item 6) that fasten the thermostat bracket (Figure 1, Item 5) and cover plate (Figure 1, Item 4) to the heat exchanger. This frees the bracket and cover plate to be removed providing access to the burner assembly and the transformer's high-tension leads connections. Discard the lockwashers.
5. Remove the gasket (Figure 1, Item 3) from the cover plate (Figure 1, Item 4). Discard the gasket.
6. Disconnect the other end of the two high-tension leads (Figure 1, Item 11) and remove the leads through the transformer base plate (Figure 1, Item 13).
7. Grommets may not be present on all models. If present, remove the two grommets (Figure 1, Item 12) from the base plate (Figure 1, Item 13) and then remove the transformer base plate.
8. Remove the two shorter shielded gaskets (Figure 1, Item 9) and/or the two longer shielded gaskets (Figure 1, Item 10), as required. Discard any gaskets that were removed.

TRANSFORMER ASSEMBLY (MODEL H-120) REPLACEMENT - (CONTINUED)

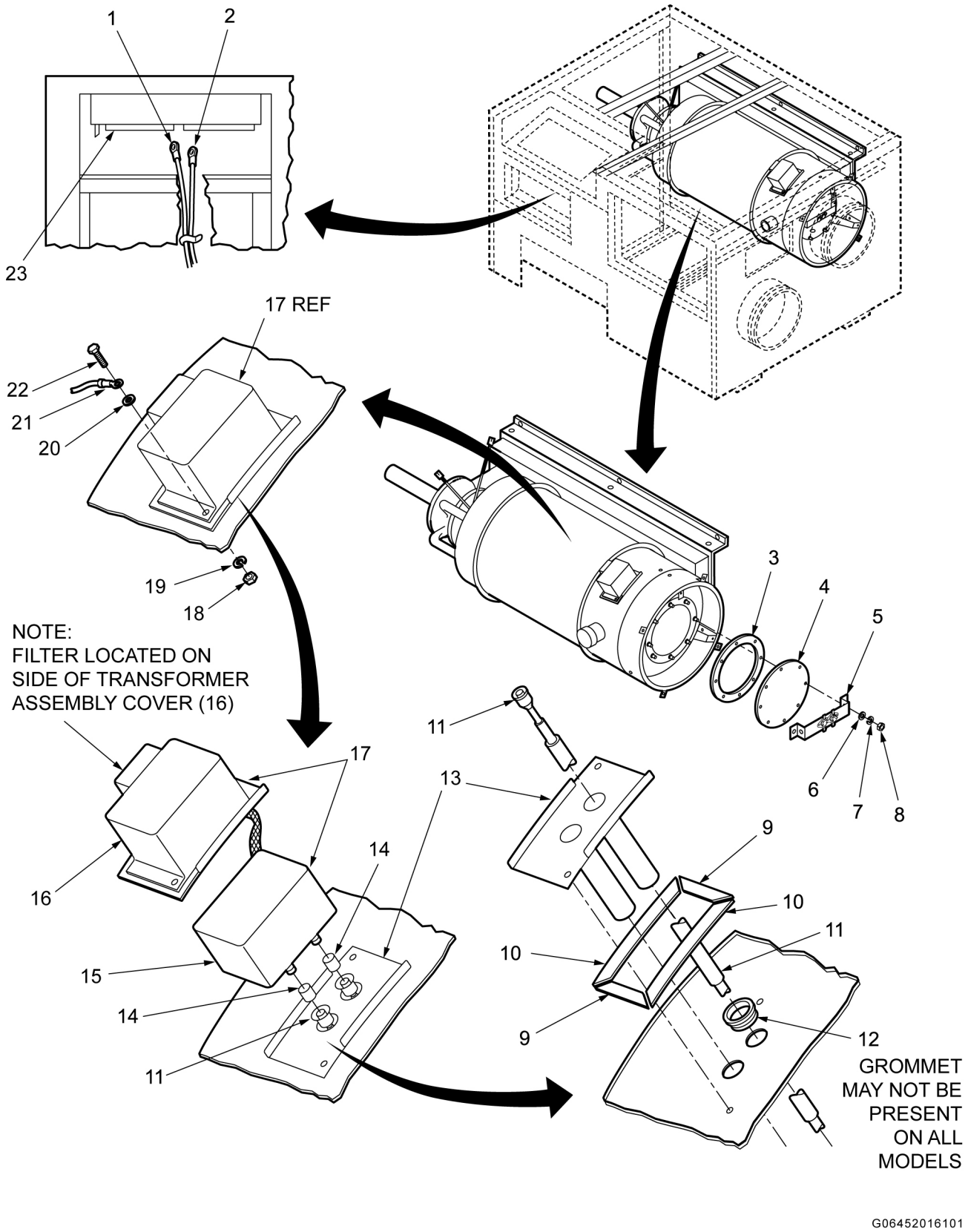


Figure 1. Transformer (Model H-120) Removal.

TRANSFORMER ASSEMBLY (MODEL H-120) REPLACEMENT - (CONTINUED)

Installation

1. Install the two shorter shielded gaskets (Figure 2, Item 3) and the two longer shielded gaskets (Figure 2, Item 4) on the transformer base plate (Figure 2, Item 2), and then position the transformer base plate on the heat exchanger shell.
2. Install the two high-tension leads (Figure 2, Item 1) through the holes provided on the base plate (Figure 2, Item 2) and then attach the other end of the high-tension leads to the electrodes on the burner assembly (Figure 2, Item 7).
3. Slide the heat shrinks (Figure 2, Item 15) over the high-tension leads (Figure 2, Item 1) and install the two high-tension leads on the transformer (Figure 2, Item 16).
4. Position and secure the heat shrink (Figure 2, Item 15) over the high-tension leads (Figure 2, Item 1) and the connection points on the transformer (Figure 2, Item 16).
5. Position the transformer (Figure 2, Item 16) on the transformer base plate (Figure 2, Item 2), and position the transformer cover (Figure 2, Item 17) on the transformer (Figure 2, Item 16).
6. Secure the transformer assembly (Figure 2, Item 18) to the base plate (Figure 2, Item 2) and heat exchanger shell with two flat washers (Figure 2, Item 21), ground wire (Figure 2, Item 22), two bolts (Figure 2, Item 23), two new lockwashers (Figure 2, Item 20) and two nuts (Figure 2, Item 19).
7. Connect wires F1-BLK/TB1-8 and F1-WHT/TB1-3 (Figure 2, Item 8) to terminal board 1 (TB1) (Figure 2, Item 24) as follows:.
   a. Connect the Black wire F1-BLK to TB1 at TB1-8.
   b. Connect the White wire F1-WHT to TB1 at TB1-3.
   c. Remove the marker tags from the wires.
8. Grommets may not be present on all models. If used, install the two grommets (Figure 2, Item 5) over the two high-tension leads (Figure 2, Item 1) and insert the grommets approximately 1/4 inch into the transformer assembly base plate (Figure 2, Item 2). Cut to fit: the new grommets, if used, may have to be cut so they can be installed over the high-tension leads.
9. Position the new gasket (Figure 2, Item 9) on the cover plate (Figure 2, Item 10), aligning the holes on the gasket with the holes on the cover plate; and mount both on the exchanger's eight studs (Figure 2, Item 6) surrounding the burner assembly opening.
10. With the new gasket and cover plate in position, mount the thermostat bracket (Figure 2, Item 11) on the cover plate (Figure 2, Item 10) using two of the same studs (Figure 2, Item 6), making sure that the bracket is horizontal to the bottom of the ASH. Typically, best results are achieved using the studs at the 3 o'clock and 9 o'clock positions.
11. With these three components (the gasket, the cover plate, and the bracket) properly positioned on the heat exchanger studs, install the eight flat washers (Figure 2, Item 12), the eight new lockwashers (Figure 2, Item 13), and the eight nuts (Figure 2, Item 14) on the eight studs surrounding the burner assembly. Tighten sufficiently to hold the assembled components securely in place.

TRANSFORMER ASSEMBLY (MODEL H-120) REPLACEMENT - (CONTINUED)

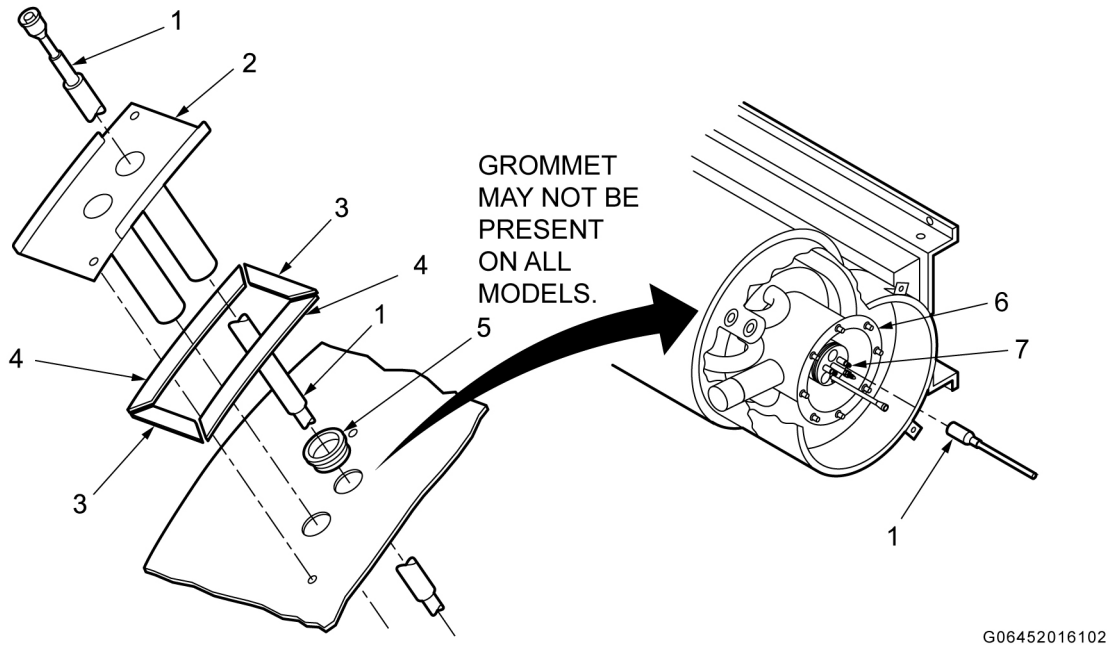


Figure 2. Transformer (Model H-120) Installation (Sheet 1 of 2).

TRANSFORMER ASSEMBLY (MODEL H-120) REPLACEMENT - (CONTINUED)

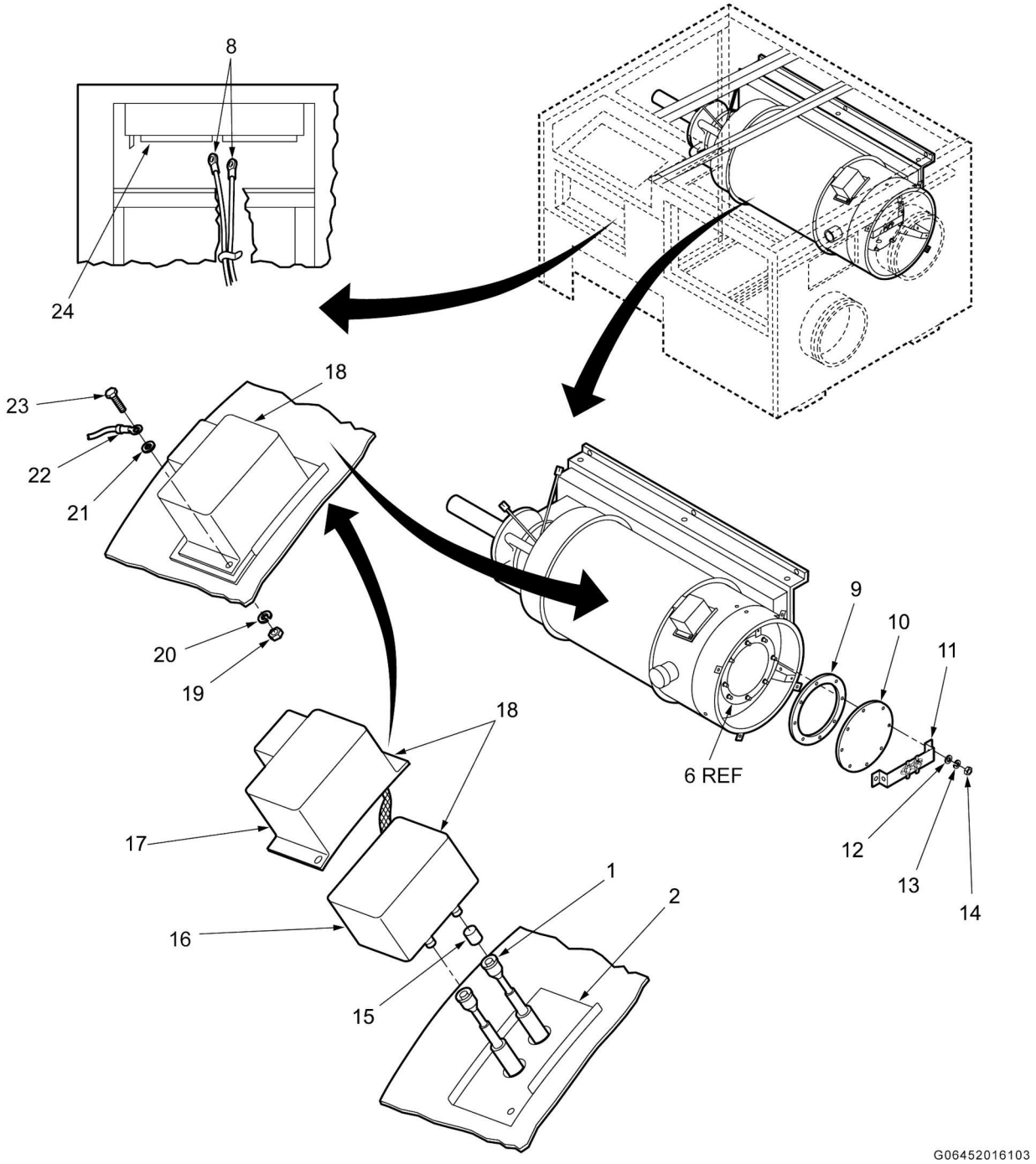


Figure 2. Transformer (Model H-120) Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Heat Gun (Shop Set, Electrical Repair Kit) (WP 0117, Item 15)
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket (WP 0084, Figure 12)
Gasket (WP 0084, Figure 13)
Heat Shrink Tubing (WP 0118, Item 9)
Lockwasher (WP 0100, Figure 28, Item 3)
Tags, Marker (WP 0116, Item 15)
Terminal Splice (WP 0118, Item 45)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Top panel removed, WP 0019
Duct cover removed, WP 0022
Supply outlet screen removed, WP 0023

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

The Model H-120-1 transformer assembly (Figure 1, Item 4) consists of two components, the transformer (Figure 1, Item 21) and the transformer cover (Figure 1, Item 22). This transformer assembly model does NOT have a filter attached to the side of the transformer cover, as evident in the transformer cover illustration.(Figure 1, Item 22).

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPLACEMENT

Removal

1. Tag and separate wire TB1-8/TR1-BLU (Figure 1, Item 1) and wire TR1-WHT/TB1-3 (Figure 1, Item 2) from the two terminal splices (Figure 1, Item 3). Apply wire marker tags. Discard the terminal splices.
2. Remove the two nuts (Figure 1, Item 6), two lockwashers (Figure 1, Item 5), two bolts (Figure 1, Item 25), ground wire (Figure 1, Item 24), and two flat washers (Figure 1, Item 23) that fasten the transformer cover (Figure 1, Item 22) to the transformer (Figure 1, Item 21); and the transformer assembly (Figure 1, Item 4) to the base plate (Figure 1, Item 18). Discard the lockwashers.

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPLACEMENT - (CONTINUED)

3. Remove the transformer cover (Figure 1, Item 22) and lift the transformer (Figure 1, Item 21) away from the base plate (Figure 1, Item 18), remove the two heat shrink tubes (Figure 1, Item 20), and disconnect the two high-tension leads (Figure 1, Item 19) from the transformer terminals. Discard the heat shrinks.
4. Tag the braided wires (Figure 1, Item 13) and (Figure 1, Item 14) that are attached to the exchanger cover plate (Figure 1, Item 8).
5. Remove the eight nuts (Figure 1, Item 12), eight lockwashers (Figure 1, Item 11), and eight flat washers (Figure 1, Item 10) that attach the thermostat bracket (Figure 1, Item 9), braided wires, and cover plate (Figure 1, Item 8) to the heat exchanger. Discard the lockwashers.
6. Remove the gasket (Figure 1, Item 7) from the cover plate (Figure 1, Item 8). Discard the gasket.
7. Disconnect the other end of the two high-tension leads (Figure 1, Item 19) and remove the leads through the transformer base plate (Figure 1, Item 18).
8. Grommets may not be present on all models. If present, remove the two grommets (Figure 1, Item 15) from the transformer base plate (Figure 1, Item 18).
9. Remove the transformer base plate (Figure 1, Item 18) from the heat exchanger shell.
10. Remove the two short shielded gaskets (Figure 1, Item 16) and the two longer shielded gaskets (Figure 1, Item 17), as required.

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPLACEMENT - (CONTINUED)

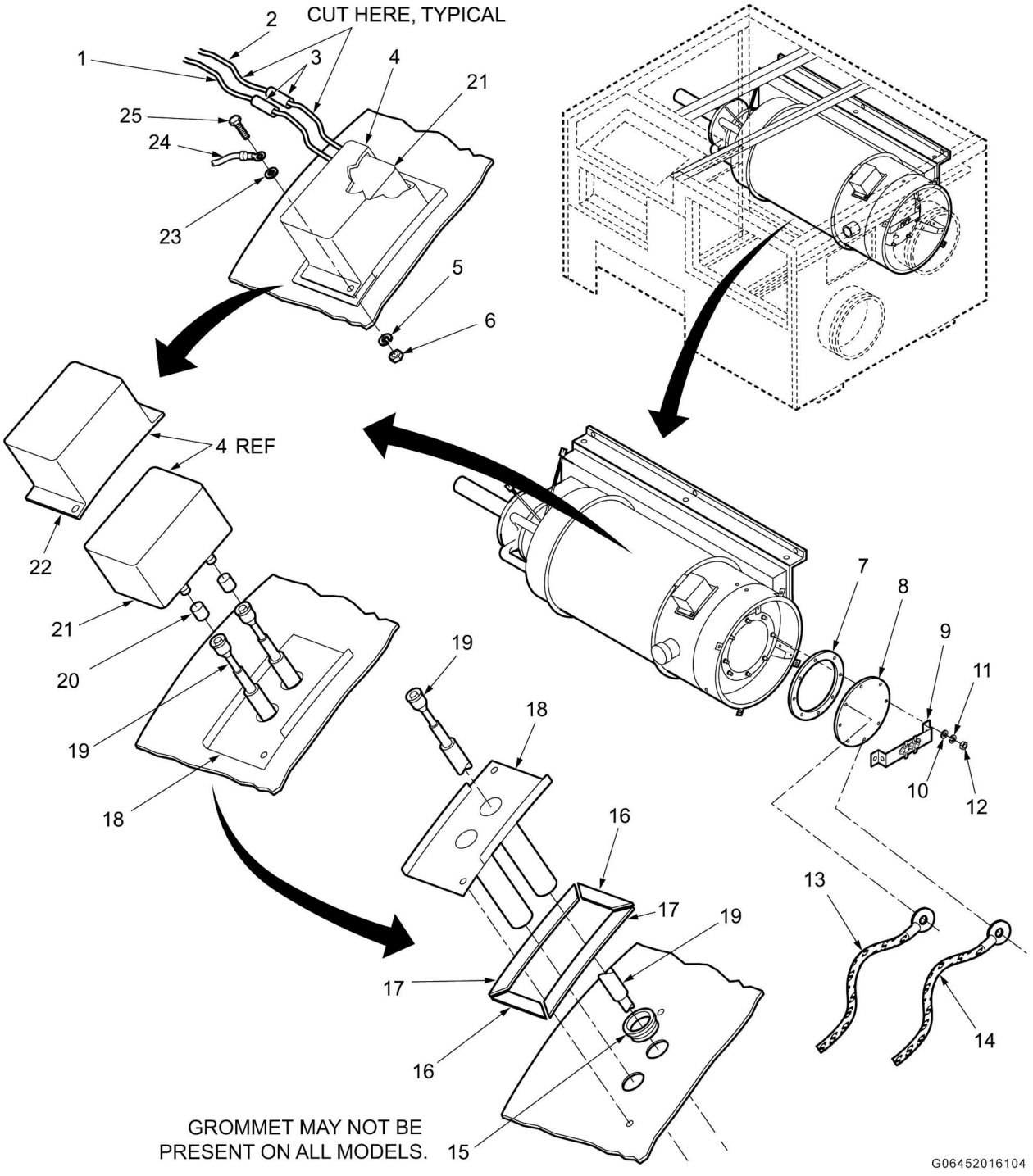


Figure 1. Transformer (Model H-120-1) Removal.

Installation

1. Apply the two short shielded gaskets (Figure 2, Item 3) and the two longer shielded gaskets (Figure 2, Item 4), as required, and install the transformer base plate (Figure 2, Item 2) on the heat exchanger shell.

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPLACEMENT - (CONTINUED)

2. Install the two high-tension leads (Figure 2, Item 1) through the holes in the transformer base plate (Figure 2, Item 2) and attach the other end of the two high-tension leads to the electrodes of the burner assembly (Figure 2, Item 7).
3. Slide the heat shrinks (Figure 2, Item 19) over the high-tension leads (Figure 2, Item 1) and install the high-tension leads on the transformer terminals (Figure 2, Item 20).
4. Position and secure the heat shrink (Figure 2, Item 19) over the high-tension leads (Figure 2, Item 1) and the transformer terminals (Figure 2, Item 20).
5. Position the transformer (Figure 2, Item 20) on the transformer base plate (Figure 2, Item 2).
6. Place the transformer cover (Figure 2, Item 21) over top of the transformer (Figure 2, Item 20) and install two bolts (Figure 2, Item 26), two flat washers (Figure 2, Item 24), ground wire (Figure 2, Item 25), two new lockwashers (Figure 2, Item 23), and two nuts (Figure 2, Item 22) to secure the transformer assembly (Figure 2, Item 10) to the base plate (Figure 2, Item 2) and heat exchanger shell.
7. Connect transformer wires TR1-BLU/TB1-8 and wire TR1-WHT/TB1-3 (Figure 2, Item 8) to their respective terminal splices (Figure 2, Item 9). Remove the wire marker tags.
8. Grommets may not be present on all models. If used, install the two grommets (Figure 2, Item 5) over the two high-tension leads (Figure 2, Item 1) and insert the grommets approximately 1/4 inch into the transformer base plate (Figure 2, Item 2). Cut to fit: the new grommets, if used, may have to be cut so they can be installed over the high-tension leads.
9. Position the new gasket (Figure 2, Item 11) on the cover plate (Figure 2, Item 12), aligning the holes on the gasket with the holes on the cover plate; and then mount both on the eight studs surrounding the opening for the burner assembly (Figure 2, Item 6).
10. With the new gasket and cover plate in position on the heat exchanger, connect one of the braided wires (Figure 2, Item 17) on the stud at the 6 o'clock position; and connect the other braided wire (Figure 2, Item 18) on the stud at the 10 o'clock position; and secure both with two flat washers (Figure 2, Item 14), two new lockwashers (Figure 2, Item 15) and two nuts (Figure 2, Item 16). Remove the wire marker tags.
11. With the new gasket and cover plate being held in position by the two braided wire connections, mount the thermostat bracket (Figure 2, Item 13) on the cover plate (Figure 2, Item 12) using two of the same eight studs (Figure 2, Item 6) surrounding the burner opening, and secure with two flat washers (Figure 2, Item 14), two new lockwashers (Figure 2, Item 15), and two nuts (Figure 2, Item 16), making sure that the bracket is horizontal to the bottom of the ASH. Typically, best results are achieved using the studs at the 3 o'clock and 9 o'clock positions.
12. With these three components (the gasket, the cover plate, and the bracket) now covering the opening for the burner assembly, install the remaining four flat washers (Figure 2, Item 14), the four new lockwashers (Figure 2, Item 15), and the four nuts (Figure 2, Item 16) on the remaining four studs. Tighten sufficiently to hold the assembled components securely in place.

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPLACEMENT - (CONTINUED)

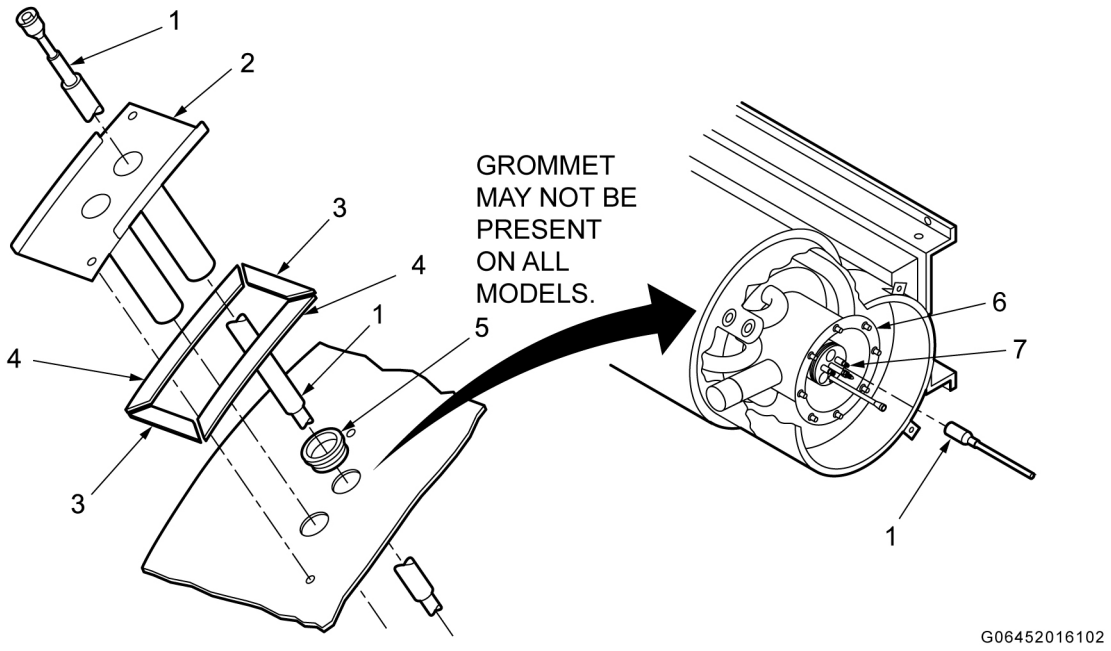


Figure 2. Transformer (Model H-120-1) Installation (Sheet 1 of 2).

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPLACEMENT - (CONTINUED)

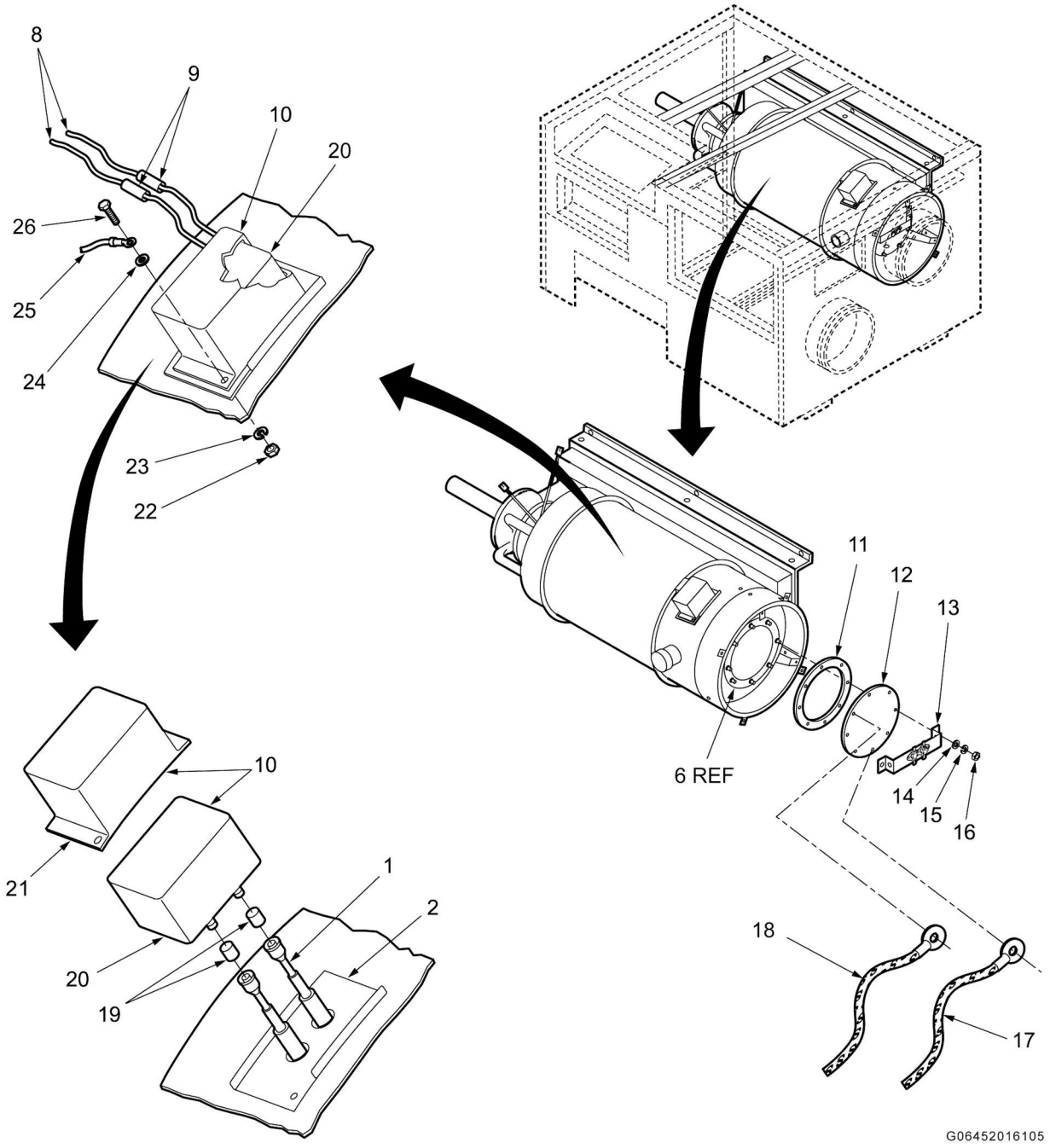


Figure 2. Transformer (Model H-120-1) Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

BURNER ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Dry Cleaning Solvent (WP 0116, Item 4)
Gasket (WP 0100, Figure 29, Item 9)
Lockwasher (WP 0100, Figure 29, Item 4)
Rags, Wiping (WP 0116, Item 11)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Supply duct cover removed, WP 0022
Supply outlet screen removed, WP 0023

WARNING

For fuel spills, refer to , Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

BURNER ASSEMBLY REPLACEMENT

Removal

1. Remove the eight nuts (Figure 1, Item 6), eight lockwashers (Figure 1, Item 5), and eight flat washers (Figure 1, Item 4) that fasten the cover plate (Figure 1, Item 2) and thermostat bracket (Figure 1, Item 3) to the heat exchanger. Discard the lockwashers.

NOTE

The cover plate (Figure 1, Item 2) may have two braided wires (Figure 1Items 7 and 8), attached on some models.

2. Tag and disconnect the braided wires (Figure 1, Item 7) and (Figure 1, Item 8), if attached to the cover plate (Figure 1, Item 2).
3. With the fasteners removed, remove the thermostat bracket (Figure 1, Item 3), cover plate (Figure 1, Item 2), and gasket (Figure 1, Item 1) from the heat exchanger studs (Figure 1, Item 19) surrounding the opening for the burner assembly. Discard the gasket.

BURNER ASSEMBLY REPLACEMENT - (CONTINUED)

4. Disconnect the two high-tension leads (Figure 1, Item 23) from the two electrodes on the burner assembly (Figure 1, Item 14).

NOTE

There is an automatic check valve in the fuel pump, but be prepared for a small fuel leak when disconnecting the fuel line from the fuel pump and/or the burner. Have a “catch basin” type container ready to catch the leaking fuel or plenty of towels or rags underneath the work area to absorb the leaking fuel.

5. Disconnect the fuel line (Figure 1, Item 24) from the burner assembly (Figure 1, Item 14). Prevent a fuel spill from the open fuel line as noted above.
6. If the flame sensor (Figure 1, Item 12) has braided wire; loosen clamps (Figure 1, Item 11) and (Figure 1, Item 10), slide braided wire (Figure 1, Item 13) off the tube (Figure 1, Item 9), and remove the flame sensor (Figure 1, Item 12).
7. If the flame sensor (Figure 1, Item 12) does not have braided wire; loosen clamp (Figure 1, Item 11) and remove the flame sensor (Figure 1, Item 12).
8. Remove the six nuts (Figure 1, Item 22), six lockwashers (Figure 1, Item 21), and six flat washers (Figure 1, Item 20) that secure the burner assembly (Figure 1, Item 14) in the well of the heat exchanger. Discard the lockwashers.
9. Remove the burner assembly (Figure 1, Item 14) and the gasket (Figure 1, Item 18) from the heat exchanger. Discard the gasket.
10. Remove the three screws (Figure 1, Item 15) from the burner assembly (Figure 1, Item 14) that secures the baffle (Figure 1, Item 17), which frees the baffle to be removed from the burner assembly.
11. Remove the fuel filter/nozzle (Figure 1, Item 16) from the baffle (Figure 1, Item 17).

BURNER ASSEMBLY REPLACEMENT - (CONTINUED)

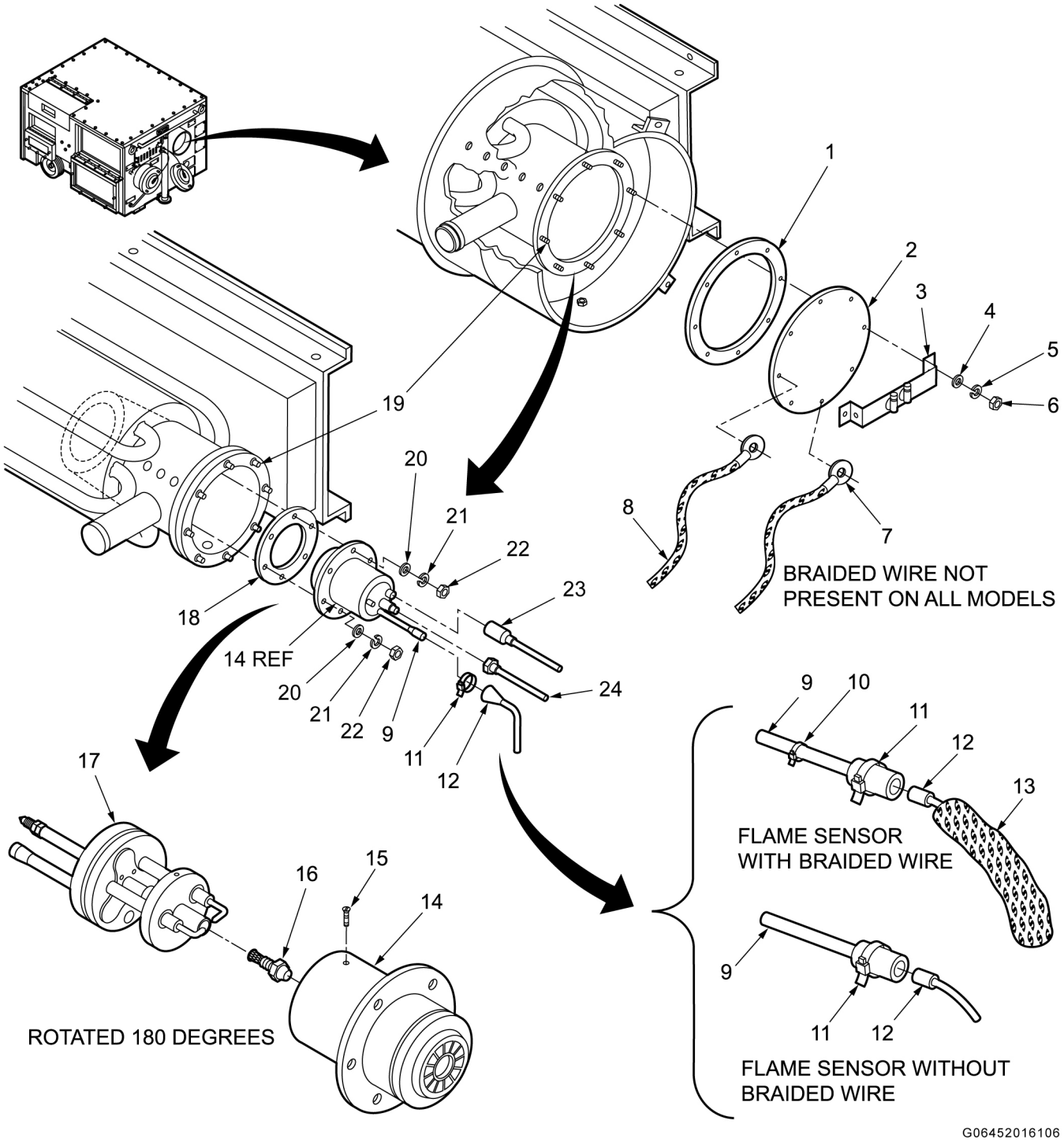


Figure 1. Burner Assembly Removal/Installation.

Installation

1. Install the fuel filter/nozzle (Figure 1, Item 16) into the baffle (Figure 1, Item 17).

BURNER ASSEMBLY REPLACEMENT - (CONTINUED)

NOTE

The burner must be installed with the flame detector tube on the bottom.

2. Install the baffle (Figure 1, Item 17) into the burner assembly housing (Figure 1, Item 14) and secure with three screws (Figure 1, Item 15).
3. Mount the new gasket (Figure 1, Item 18) on the burner assembly (Figure 1, Item 14), aligning the holes in the gasket with the holes on the flange surrounding the burner assembly. When properly positioned, install the new gasket and burner assembly onto the six studs in the well of the exchanger; and secure with the six nuts (Figure 1, Item 22), six new lockwashers (Figure 1, Item 21), and six flat washers (Figure 1, Item 20).
4. If the flame sensor (Figure 1, Item 12) does not have braided wire; slide the clamp (Figure 1, Item 11) on the tube (Figure 1, Item 9) and install flame sensor (Figure 1, Item 12) into the tube, securing it with the clamp (Figure 1, Item 11).
5. If the flame sensor (Figure 1, Item 12) does have braided wire; slide the clamps (Figure 1, Item 10) and (Figure 1, Item 11) on the tube (Figure 1, Item 9), install flame sensor (Figure 1, Item 12) into tube (Figure 1, Item 9), slide braided wire (Figure 1, Item 13) over the tube (Figure 1, Item 9), and secure with clamp (Figure 1, Item 10). Position the other clamp (Figure 1, Item 11) over the sensor (Figure 1, Item 12) and braided wire (Figure 1, Item 13) and secure.
6. Connect the fuel line (Figure 1, Item 24) and the two high-tension leads (Figure 1, Item 23) to the burner assembly (Figure 1, Item 14).
7. Position the new gasket (Figure 1, Item 1) on the cover plate (Figure 1, Item 2), aligning the holes on the gasket with the holes on the cover plate; and mount both on the 8 studs (Figure 1, Item 19) surrounding the heat exchanger burner assembly opening.
8. With the new gasket and cover plate in position, mount the thermostat bracket (Figure 1, Item 3) on the cover plate (Figure 1, Item 2) using two of the same eight studs used by the cover plate, making sure that the bracket is horizontal to the bottom of the ASH. Typically, best results are achieved using the studs at the 3 o'clock position and 9 o'clock positions.
9. Secure the thermostat bracket (Figure 1, Item 3) in the horizontal position on the cover plate (Figure 1, Item 2) by installing two washers (Figure 1, Item 4), two new lockwashers (Figure 1, Item 5), and two nuts (Figure 1, Item 6) on the same two studs used by the bracket.

NOTE

The cover plate (Figure 1, Item 2) may have two braided wires attached on some models. If the cover plate is equipped with two braided wires, attach braided wire (Figure 1, Item 7) on the stud at the 6 o'clock position and attach braided wire (Figure 1, Item 8) on the stud at the 10 o'clock position. Remove the wire marker tags.

10. With these three components (the gasket, the cover, and the bracket) properly positioned on the heat exchanger studs, install the remaining six flat washers (Figure 1, Item 4), the six new lockwashers (Figure 1, Item 5), and six nuts (Figure 1, Item 6) on the remaining six studs (Figure 1, Item 19). Tighten sufficiently to hold the assembled components securely in place.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

REMOTE CONTROL THERMOSTAT AND CABLE REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Soldering Iron (Shop Set, Electrical Repair Kit) (WP 0117, Item 18)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

REMOTE CONTROL THERMOSTAT AND CABLE REPLACEMENT

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

NOTE

The disassembly and assembly procedures below allow you to replace both the thermostat and cable. If replacing only the thermostat or the cable, disassemble only to the extent required to replace the defective part.

Disassembly

1. Disconnect the remote control thermostat (Figure 1, Item 6) from the front panel of the ASH (Figure 1, Item 5) at the point of connection (Figure 1, Item 4) labeled “J3 Remote Thermostat”.
2. Remove the four screws (Figure 1, Item 3) and the cover (Figure 1, Item 2) from the back of the thermostat remote control box (Figure 1, Item 1).
3. Remove the three screws (Figure 1, Item 8), and remove the three wires (Figure 1, Item 9), (Figure 1, Item 10), and (Figure 1, Item 11) that terminate at terminal board 2 (TB2) (Figure 1, Item 15) located inside of the thermostat box (Figure 1, Item 1). Apply marker tags to the individual wires.
4. Loosen the cable nut (Figure 1, Item 13) from the connector (Figure 1, Item 14) and remove the cable (Figure 1, Item 12) from the remote thermostat box (Figure 1, Item 1).

REMOTE CONTROL THERMOSTAT AND CABLE REPLACEMENT - (CONTINUED)

5. Loosen and remove the box interior nut (Figure 1, Item 16) and the connector (Figure 1, Item 14) providing a wire raceway through bottom of the thermostat box (Figure 1, Item 1).

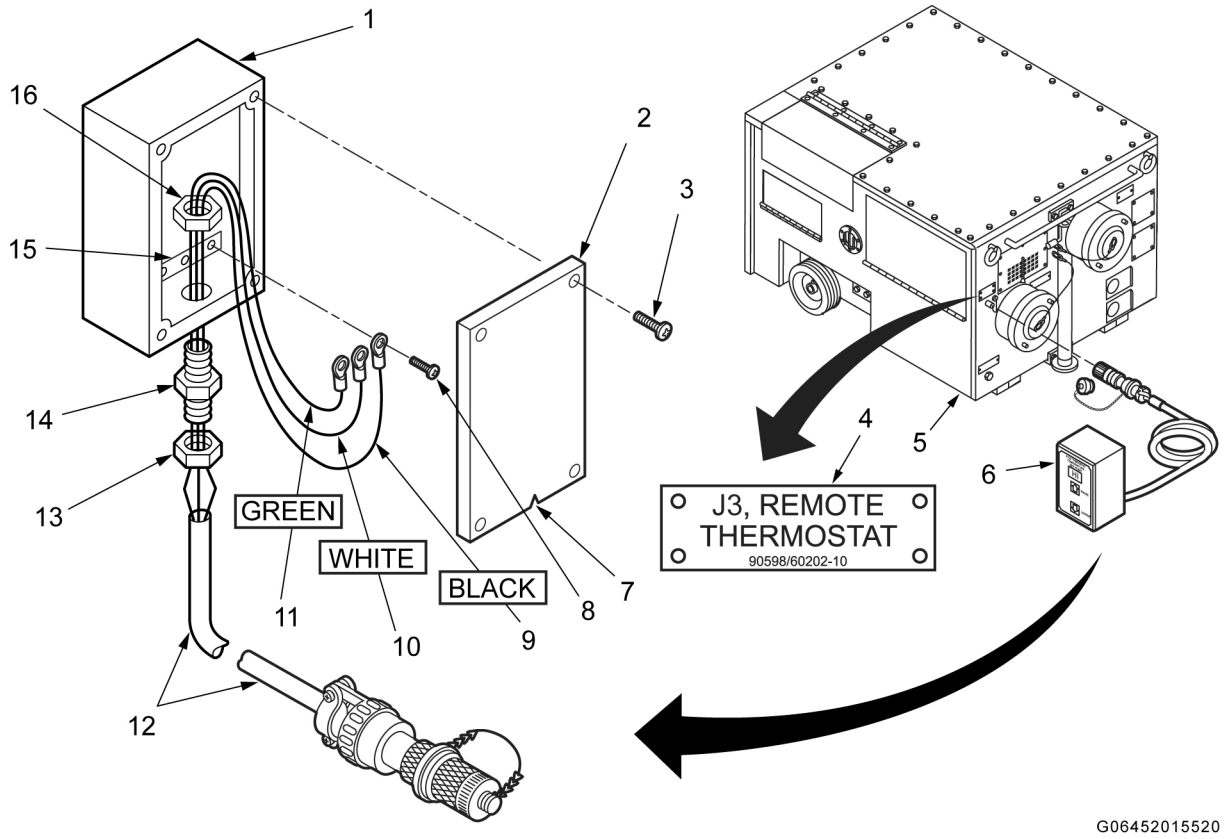


Figure 1. Remote Control Thermostat and Cable Disassembly/Assembly.

Assembly

1. Install the connector (Figure 1, Item 14) through the hole in the bottom of the thermostat box (Figure 1, Item 1) and secure with the box interior nut (Figure 1, Item 16).
2. Install wires (Figure 1Items 9, 10 and 11) through the cable nut (Figure 1, Item 13) and connector (Figure 1, Item 14) into the thermostat box (Figure 1, Item 1).
3. Using the three screws previously removed from the wire terminals (Figure 1, Item 8), connect wires (Figure 1Items 9, 10 and 11) to terminal board 2 (TB2) (Figure 1, Item 15) configured as follows:
   a. Connect the GREEN wire P3-C/TB2-1 (Figure 1, Item 11) to TB2-1.
   b. Connect the WHITE wire P3-A/TB2-2 (Figure 1, Item 10) to TB2-2.
   c. Connect the BLACK wire P3-B/TB2-3 (Figure 1, Item 9) to TB2-3.

NOTE

The flat edges of the connector (Figure 1, Item 14) and box interior nut (Figure 1, Item 16) must be parallel with the back edge of the remote thermostat box (Figure 1, Item 1) or the cover (Figure 1, Item 2) will not seal properly.

4. Position the cable (Figure 1, Item 12) in the connector (Figure 1, Item 14) until the cable insulation is flush with the inside of the connector (Figure 1, Item 14) and tighten the cable nut (Figure 1, Item 13).

REMOTE CONTROL THERMOSTAT AND CABLE REPLACEMENT - (CONTINUED)

5. Install the cover (Figure 1, Item 2) and four screws (Figure 1, Item 3) on the back of the remote thermostat box (Figure 1, Item 1), making sure that the notch in the edge of the cover (Figure 1, Item 7) is at the bottom of the box.
6. The remote control thermostat and cable (Figure 1, Item 6) are now ready to be reconnected to front panel of the ASH (Figure 1, Item 5) at the point of connection (Figure 1, Item 4) labeled “J3 Remote Thermostat”.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

POWER CABLE ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0096, Figure 12, Item 2)
Lockwasher (WP 0096, Figure 12, Item 8)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

POWER CABLE ASSEMBLY REPLACEMENT

Removal

1. Open the right-side rear door (Figure 1, Item 5) and the larger, right-side front door (Figure 1, Item 6) on the ASH (Figure 1, Item 7).
2. Tag and disconnect the wires (Figure 1, Item 17), (Figure 1, Item 18) and (Figure 1, Item 19) from terminal board 1 (TB1) (Figure 1, Item 2) as follows:
   a. Remove the BLACK wire P1-A (Figure 1, Item 18) from position TB1-1.
   b. Remove the WHITE wire P1-B (Figure 1, Item 19) from position TB1-2.
   c. Reconnect any other wires that may have been disconnected at shared terminal points to gain access to the above specified wires.
   d. Remove the nut (Figure 1, Item 14), lockwasher (Figure 1, Item 15), flat washer (Figure 1, Item 16), and the GREEN wire P1-C (Figure 1, Item 17) from the ground post (G1) (Figure 1, Item 1). Discard the lockwasher.
   e. Reconnect any other wires sharing the ground post that may have been disconnected to gain access to the above specified ground wire.
3. Remove any wire tie-down straps (Figure 1, Item 3), as required.
4. Loosen the nut (Figure 1, Item 12) holding the wire clamp (Figure 1, Item 13) to the combustion air fan assembly (Figure 1, Item 11) and feed the power cable (Figure 1, Item 8) through the clamp.
5. Loosen the nut (Figure 1, Item 9) on the incoming power cable connection fitting (Figure 1, Item 10) labeled “Electrical Power Lead-In Cable” located on the exterior front panel of the ASH (Figure 1, Item 7) and gently pull the power cable (Figure 1, Item 8) through the fitting (Figure 1, Item 10) from outside the ASH.

POWER CABLE ASSEMBLY REPLACEMENT - (CONTINUED)

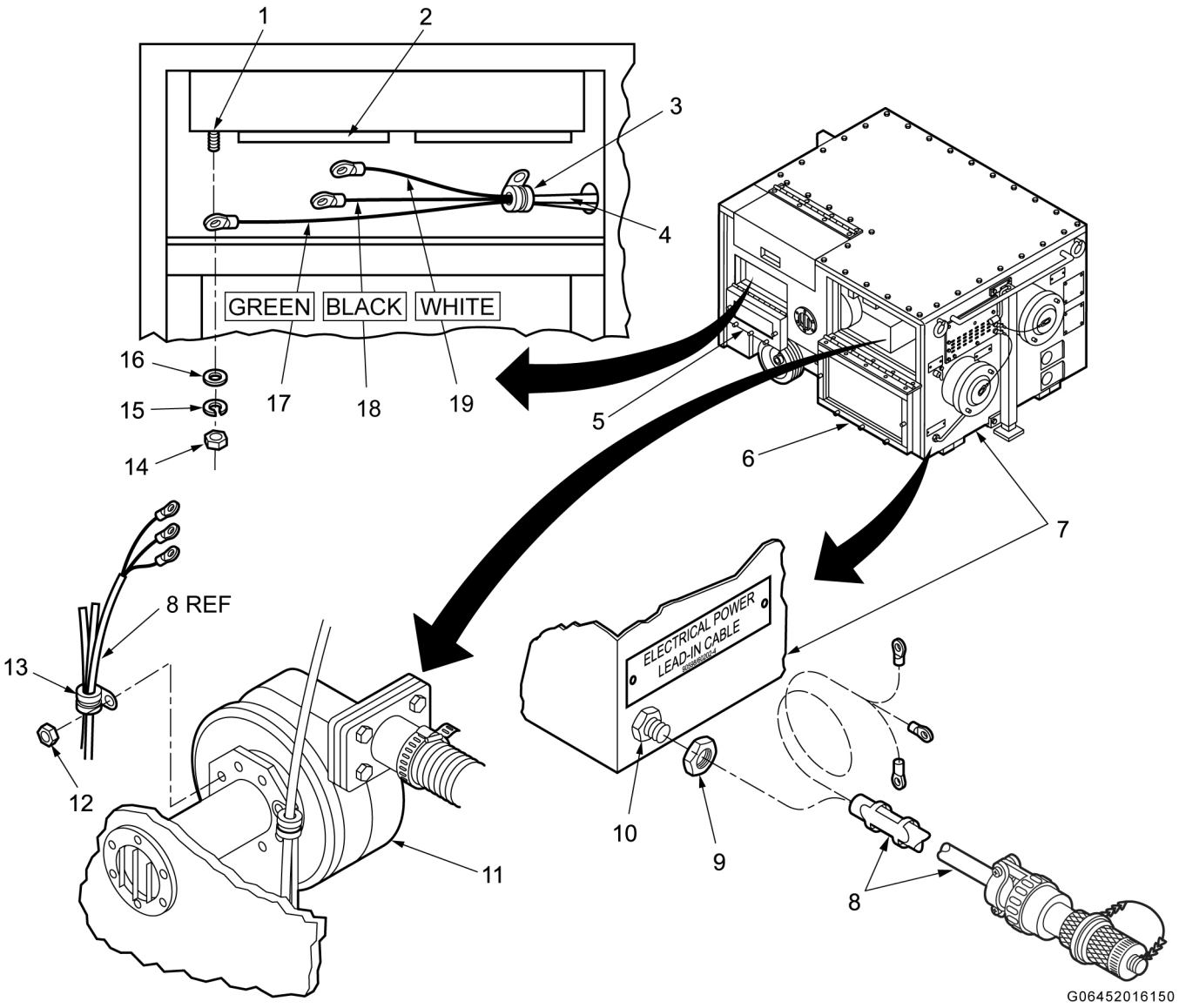


Figure 1. Power Cable Removal/Installation.

Installation

1. Insert the power cable (Figure 1, Item 8) into the ASH by gently pushing it through the incoming power cable connection fitting (Figure 1, Item 10) labeled “Electrical Power Lead-In Cable” located on the exterior front panel of the ASH (Figure 1, Item 7).
2. Route the power cable (Figure 1, Item 8) along the bottom of the ASH, from front to back, and under the combustion air fan assembly (Figure 1, Item 11).
3. From directly underneath the combustion air fan assembly (Figure 1, Item 11), bring the power cable (Figure 1, Item 8) up along side of the fan and feed the power cable through the wire clamp (Figure 1, Item 13) attached to the combustion air fan assembly (Figure 1, Item 11). Be sure to allow enough slack enabling the wires to reach the terminal board (TB1) (Figure 1, Item 2) and the ground post (G1) (Figure 1, Item 1).
4. Connect wires (Figure 1, Item 17), (Figure 1, Item 18), and (Figure 1, Item 19) to terminal board (TB1) (Figure 1, Item 2) and ground post G1 (Figure 1, Item 1) as follows:
   a. Connect the GREEN wire P1-C (Figure 1, Item 17) to the ground post G1 (Figure 1, Item 1) and secure with flat washer (Figure 1, Item 16), new lockwasher (Figure 1, Item 15), and nut (Figure 1, Item 14). Tighten nut sufficiently to ensure a good contact.

POWER CABLE ASSEMBLY REPLACEMENT - (CONTINUED)

b. Connect the WHITE wire P1-B (Figure 1, Item 19) to TB1 position TB1-2 (Figure 1, Item 2). Tighten nut sufficiently to ensure a good contact.
c. Connect the BLACK wire P1-A (Figure 1, Item 18) to TB1 position TB1-1 (Figure 1, Item 2). Tighten nut sufficiently to ensure a good contact.

5. Secure the power cable (]Figure 1, Item 8) and the wire bundle (Figure 1, Item 4) using wire tie-down straps (Figure 1, Item 3), as required.
6. Tighten the nut (Figure 1, Item 12) to secure the wire clamp (Figure 1, Item 13) to the combustion air fan assembly (Figure 1, Item 11).
7. Tighten the nut (Figure 1, Item 9) on incoming power cable connection fitting (Figure 1, Item 10) labeled “Electrical Power Lead-In Cable” located on the exterior front panel of the ASH (Figure 1, Item 7).
8. Close the right-side rear door (Figure 1, Item 5) and the larger, right-side front door (Figure 1, Item 6) on the ASH (Figure 1, Item 7).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Face Shield (Tool Set, SATS) (WP 0117, Item 5)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
External Power Cable Adapter Cord (WP 0103, Figure 32, Item 1)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For first aid instructions, refer to FM 4-25.11,First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Be certain that there is someone assisting you who can remove power immediately.

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPLACEMENT

External Power Cable Adapter Cord Inspection

1. Disconnect external power cable adapter cord (Figure 1, Item 3) from power cable assembly (Figure 1, Item 1) and from grounded, screw-lug-type power source or facility power (Figure 1, Item 2).
2. Inspect the adapter cord (Figure 1, Item 3) for frayed or cracked insulation and cracked, bent, or broken connectors.
3. Inspect the power cable assembly connector (Figure 1, Item 1) for cracks, wear, or foreign objects.
4. Proceed to “External Power Cable Adapter Cord Replacement” below if inspection reveals exposed wires and/or damaged connectors.

External Power Cable Adapter Cord Replacement

1. Ensure that the external power source is off.
2. Insert the power cable assembly connector (Figure 1, Item 1) into the external power cable adapter cord connector (Figure 1, Item 3).

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPLACEMENT - (CONTINUED)

3. Reconnect the external power cable adapter cord connector's three wires to the lugs on the external power source (Figure 1, Item 2):
   a. Black wire to “hot” lug.
   b. White wire to neutral
   c. Green to ground.

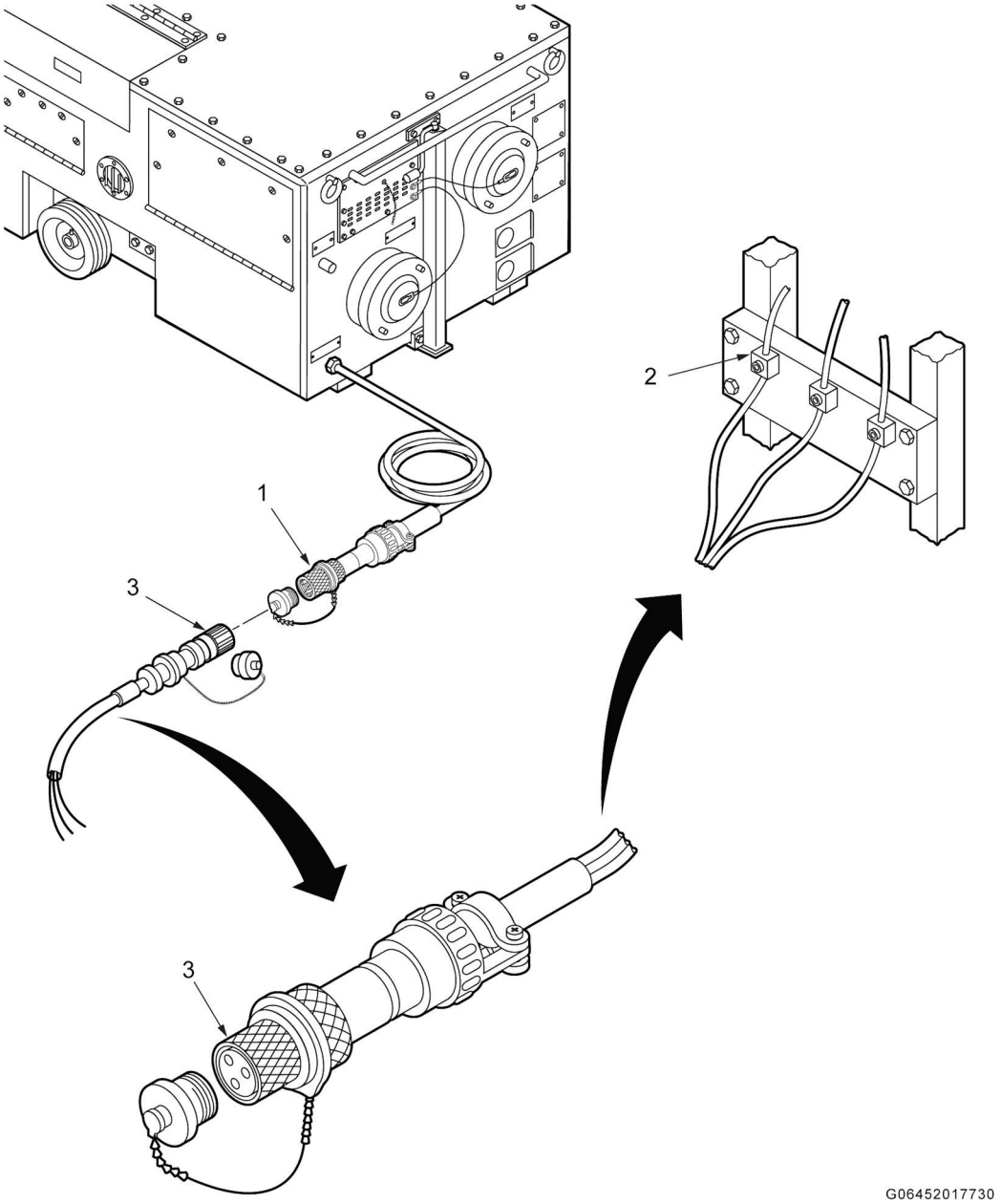


Figure 1. External Power Cable Adapter Cord Replacement.

Internal Power Cable Adapter Cord (J3) Removal

1. Tag and disconnect wires J3-C/TB3-4 (Figure 2, Item 10), J3-B/TB3-3 (Figure 2, Item 11) and J3-A/TB3-2 (Figure 2, Item 12) from the terminal board 3 (TB3) (Figure 2, Item 2).
2. Tag and disconnect the braided wire (Figure 2, Item 13) from the ground post (Figure 2, Item 1).
3. Remove the wire tie-down straps (Figure 2, Item 3), as required.

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPLACEMENT - (CONTINUED)

4. Slide the internal adapter cord, consisting of wires J3-C, J3-B, J3-A (Figure 2Items 10, 11, and 12), and the braided ground wire (Figure 2, Item 13), through wire clamps running along the inside top edge of the ASH frame (Figure 2, Item 9) to the front panel connection labeled “J3 Remote Thermostat” (Figure 2, Item 8) next to the damper grill.
5. Drill out the rivet (Figure 2, Item 6) and remove the cover (Figure 2, Item 7) to the J3 connector (Figure 2, Item 4).
6. Remove the ring nut (Figure 2, Item 5) that secures the head of the J3 connector (Figure 2, Item 4) to the front panel of the ASH.
7. Remove the internal adapter cord.

Internal Power Cable Adapter Cord (J3) Installation

1. Place the wire bundle of the internal power cable adapter cord (Figure 2, Item 4) into the interior of the ASH.
2. Install the J3 connector (Figure 2, Item 4) and ring nut (Figure 2, Item 5) onto the front panel at the proper location marked with nameplate “J3 Remote Thermostat” (Figure 2, Item 8) next to the damper grill. Tighten ring nut sufficiently to secure J3 connector against the front panel.
3. Install the rivet (Figure 2, Item 6) that attaches the chain to the front panel of the ASH; then, screw the cover (Figure 2, Item 7) onto the J3 connector (Figure 2, Item 4).
4. Slide the wire bundle, consisting of wires J3-C, J3-B, J3-A (Figure 2Items 10, 11, and 12) and the braided ground wire (Figure 2, Item 13), through the wire clamps running along the inside top edge of the ASH (Figure 2, Item 9) to the terminal board 3 (TB3) (Figure 2, Item 2).
5. Connect the individual wires (emanating from this J3 wire bundle) to terminal board TB3 ((Figure 2, Item 2)). as follows:
   a. Connect wire J3-C to TB3-4 (Figure 2, Item 10).
   b. Connect wire J3-B to TB3-3 (Figure 2, Item 11).
   c. Connect wire J3-A to TB3-2 (Figure 2, Item 12).
6. Connect the braided ground wire (Figure 2, Item 13) to the ground post (Figure 2, Item 1) at the terminal box.
7. Install wire tie-down straps (Figure 2, Item 3), as required.

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPLACEMENT - (CONTINUED)

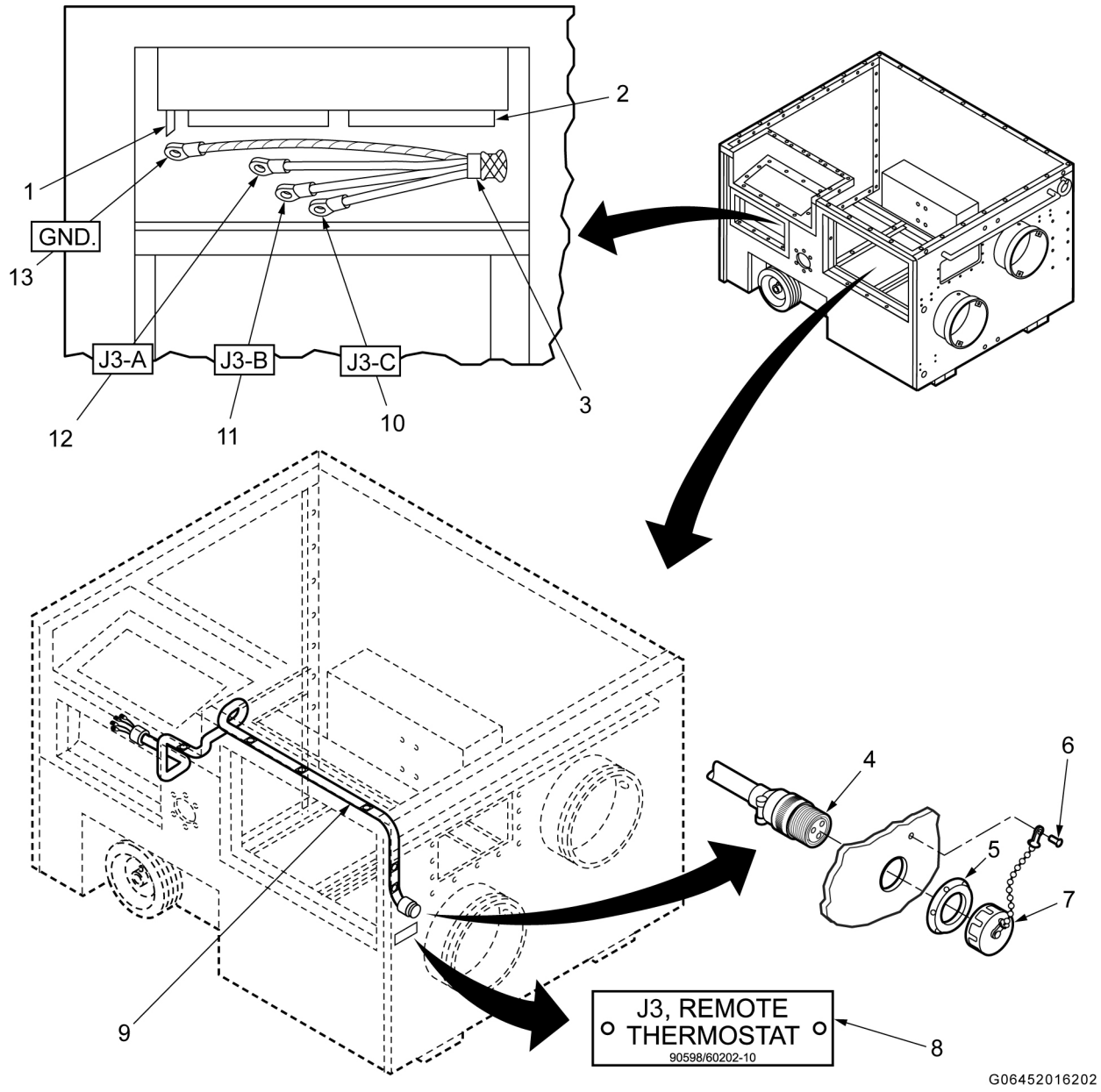


Figure 2. Internal Power Cable Adapter Cord (J3) Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

JACK ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0105, Figure 34, Item 2)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
Wheels in the stowed position

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

JACK ASSEMBLY REPLACEMENT

Removal

1. Remove the four screws (Figure 1, Item 4), four lockwashers (Figure 1, Item 3), and four flat washers (Figure 1, Item 2) from the brackets at the top (Figure 1, Item 10) and bottom (Figure 1, Item 9) of the jack. Discard the lockwashers.
2. Remove the single screw (Figure 1, Item 8), lockwasher (Figure 1, Item 7), and flat washer (Figure 1, Item 6) from the bottom bracket of the jack (Figure 1, Item 9). The jack is now free to be removed from the front panel of the ASH (Figure 1, Item 1). Discard the lockwashers.

Installation

1. Position the jack assembly (Figure 1, Item 5) on the front panel of the ASH (Figure 1, Item 1), and install the four flat washers (Figure 1, Item 2), four new lockwashers (Figure 1, Item 3), and four screws (Figure 1, Item 4) through the brackets at the top (Figure 1, Item 10) and bottom (Figure 1, Item 9) of the jack. Hand tighten only.
2. Install a flat washer (Figure 1, Item 6), new lockwasher (Figure 1, Item 7), and screw (Figure 1, Item 8) through the center of the bracket (Figure 1, Item 9) on the bottom of the jack (Figure 1, Item 5).
3. Tighten all screws (Figure 1, Item 4) and (Figure 1, Item 8) in Steps 1 and 2 above to secure the jack assembly to the frame.

JACK ASSEMBLY REPLACEMENT - (CONTINUED)

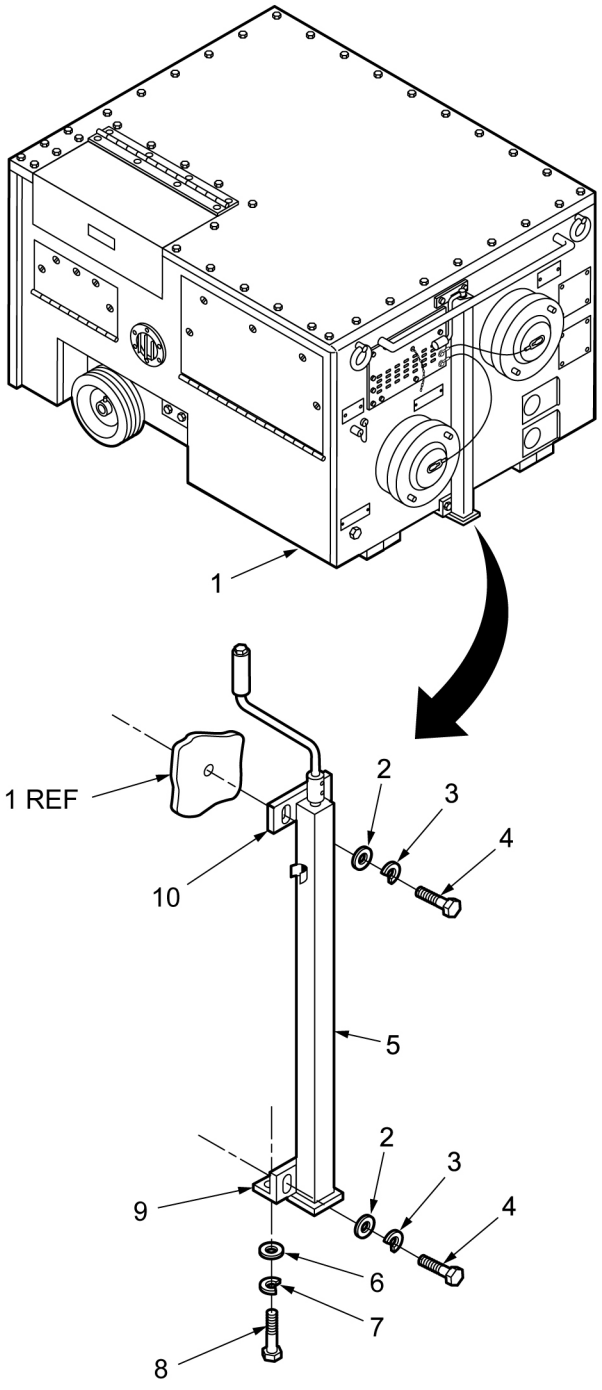


Figure 1. Jack Assembly.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

WHEEL ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Cable (WP 0083, Figure 2)
Cotter Pin (WP 0105, Figure 35, Item 1)
Cotter Pin (WP 0105, Figure 35, Item 5)
Grease (WP 0116, Item 6)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
Wheels in stowed position

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

WHEEL ASSEMBLY REPLACEMENT

Removal

1. Remove the cotter pin (Figure 1, Item 12) and flat washer (Figure 1, Item 9) from the wheel assembly (Figure 1, Item 1). Discard the cotter pin.
2. Remove the pin (Figure 1, Item 10) and the wheel assembly (Figure 1, Item 1) from the pivot (Figure 1, Item 2).
3. Remove the cotter pin (Figure 1, Item 6), flat washer (Figure 1, Item 7), wheel (Figure 1, Item 5) and flat washer (Figure 1, Item 4) from the arm (Figure 1, Item 3). Discard the cotter pin.
4. Remove the pin (Figure 1, Item 10) from the cable (Figure 1, Item 11) only if replacement is necessary.

Installation

1. Install the pin (Figure 1, Item 10) and the new cotter pin (Figure 1, Item 12) on the cable (Figure 1, Item 11).
2. Install the flat washer (Figure 1, Item 4), wheel (Figure 1, Item 5), flat washer (Figure 1, Item 7), and the new cotter pin (Figure 1, Item 6) on the arm (Figure 1, Item 3) to assemble the wheel assembly.
3. Install the wheel assembly (Figure 1, Item 1) on the pivot (Figure 1, Item 2) and install the pin (Figure 1, Item 10) that fastens them together.
4. Install the flat washer (Figure 1, Item 9) and new cotter pin (Figure 1, Item 12) onto the wheel assembly (Figure 1, Item 1). When properly assembled, the flat washer (Figure 1, Item 9) should be pinched between the cotter pin (Figure 1, Item 12) and the pin (Figure 1, Item 10) on the wheel assembly.
5. Service grease fitting (Figure 1, Item 8) with grease.
6. Check/service tire pressure, which should be properly pressurized to 15 PSI.

WHEEL ASSEMBLY REPLACEMENT - (CONTINUED)

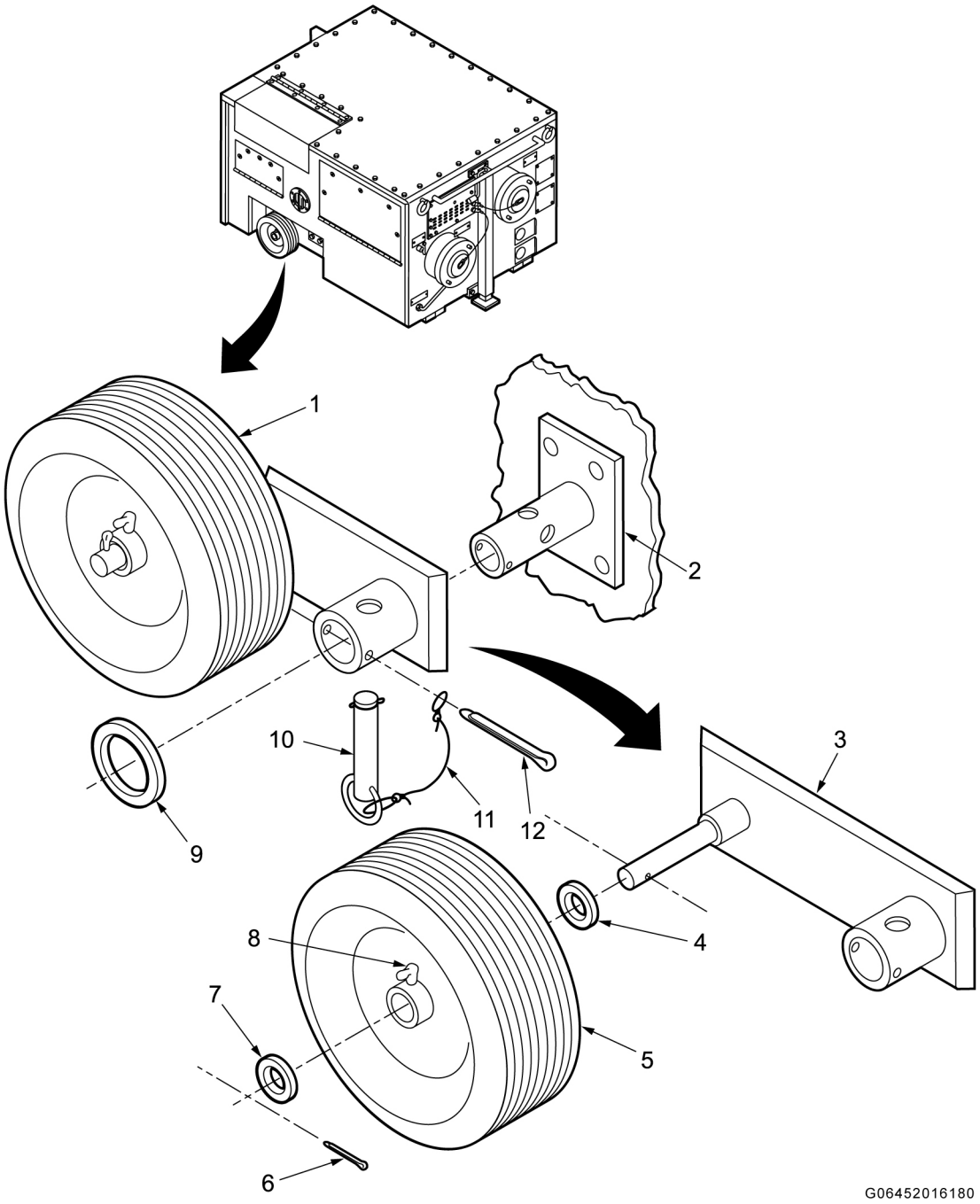


Figure 1. Wheel Assembly Removal/Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

DAMPER ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Drill (Tool Set, SATS) (WP 0117, Item 4)
Face Shield (Tool Set, SATS) (WP 0117, Item 5)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Riveter, Blind, Hand (WP 0117, Item 12)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Chain (WP 0082, (Figure 1)
Gasket x 2 (WP 0084, Figure 3, Item 1)
Gasket x 2 (WP 0084, Figure 3, Item 2)
Gasket x 2 (WP 0084, Figure 4, Item 1)
Gasket x 2 (WP 0084, Figure 4, Item 2)
Lockwasher (WP 0106, Figure 36, Item 3)
Rivets (WP 0106, Figure 36, Items 7, 13, and 15)
Washers, Backup (WP 0106, Figure 36, Item 16)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For first aid instructions, refer to FM 4-25.11,First Aid.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

DAMPER ASSEMBLY REPLACEMENT

Removal

1. Remove the clip (Figure 1, Item 3) and pendant (Figure 1, Item 4) from the chain (Figure 1, Item 2) suspended from the damper grill (Figure 1, Item 9).

NOTE

The damper grill is attached using eight or sixteen sets of fasteners. Remove the quantity of hardware that the configuration requires. Grills are interchangeable between all units.

2. Remove the eight or sixteen screws (Figure 1, Item 7), lockwashers (Figure 1, Item 6), and flat washers (Figure 1, Item 5), and two duct cover attaching cables (Figure 1, Item 8) from the grill (Figure 1, Item 9). Discard the lockwashers.
3. Feed the chain (Figure 1, Item 2) through the damper grill (Figure 1, Item 9) while removing the grill from the damper assembly (Figure 1, Item 20).
4. Remove the damper assembly (Figure 1, Item 20) from the frame (Figure 1, Item 1).

DAMPER ASSEMBLY REPLACEMENT - (CONTINUED)

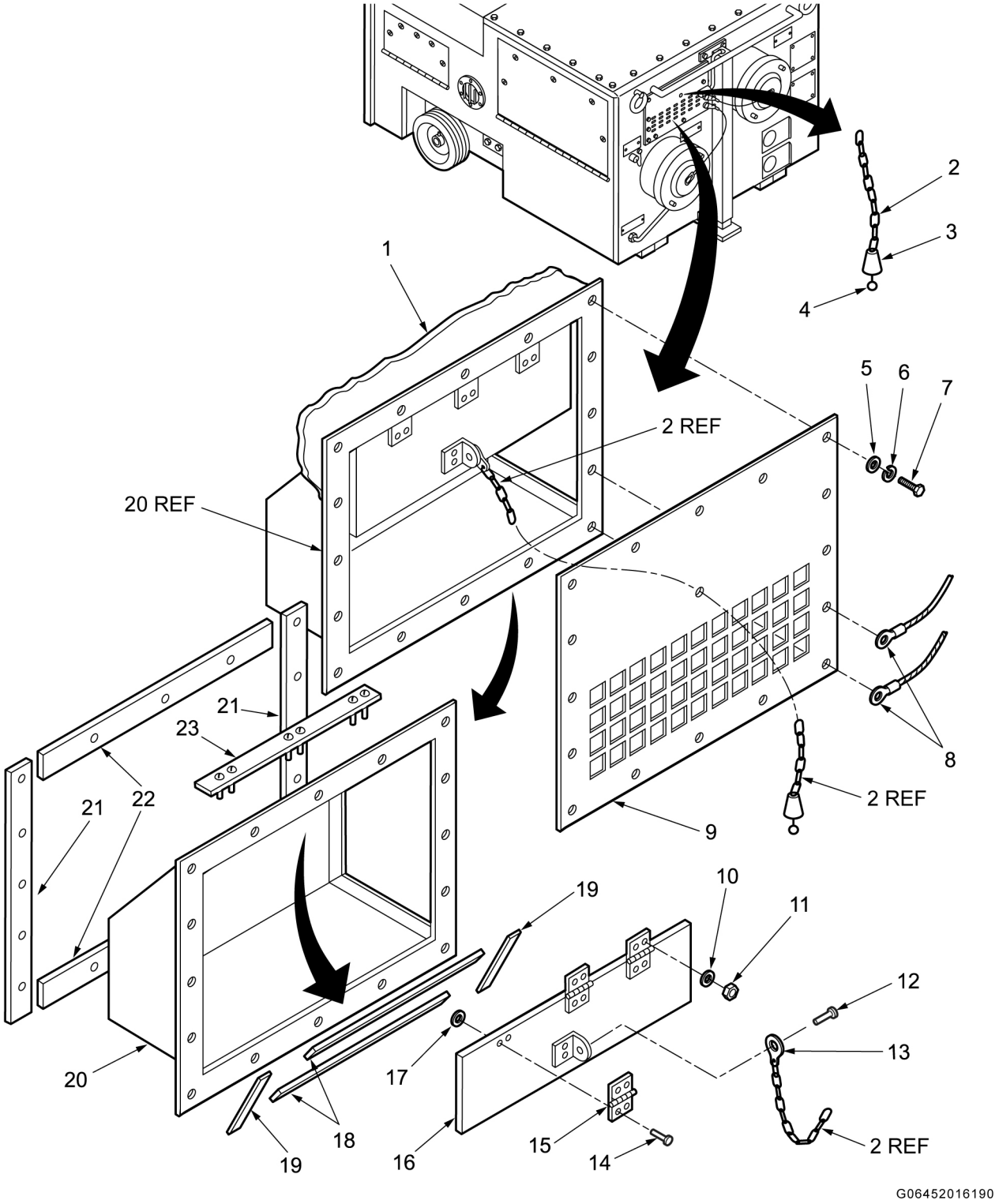


Figure 1. Damper Assembly Removal/Installation.

Installation

1. Insert the damper assembly (Figure 1, Item 20) into the frame (Figure 1, Item 1).

DAMPER ASSEMBLY REPLACEMENT - (CONTINUED)

2. Feed the chain (Figure 1, Item 2) through the slot in the damper grill (Figure 1, Item 9) and install the clip (Figure 1, Item 4) and pendant (Figure 1, Item 3) on the chain o(Figure 1, Item 2).

NOTE

Do not install screws in the right-hand, bottom two positions of the grill at this time. These two positions must remain open temporarily to attach duct cover cables later in the process.

The grill is attached using eight or sixteen sets of hardware. Install the quantity of fasteners that the configuration requires. Grills are interchangeable between all units.

3. Install, as required, the six or fourteen flat washers (Figure 1, Item 5), new lockwashers (Figure 1, Item 6), and screws (Figure 1, Item 7) around the grill perimeter (Figure 1, Item 9) to secure the grill to the front panel. Tighten fasteners securely.
4. Position the two duct cover attaching cables (Figure 1, Item 8) in the right-hand, bottom two positions of the grill (Figure 1, Item 9) one at a time, and secure each with a flat washer (Figure 1, Item 5), new lockwasher (Figure 1, Item 6), and screw (Figure 1, Item 7). Tighten fasteners securely.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FRAME ASSEMBLY REPLACEMENT

INITIAL SETUP:

Tools and Special Tools
Drill (Tool Set, SATS) (WP 0117, Item 4)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Riveter, Hand, Blind (WP 0117, Item 10)
Riveter, Hand, Blind (WP 0117, Item 11)
Riveter, Hand, Blind (WP 0117, Item 12)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Backup Washers (WP 0107, Figure 40, Item 3)
Cotter Pin (WP 0107, Figure 37, Item 9)
Gasket (WP 0097, Figure 19, Item 6)
Grommet (WP 0085, Figure 1)
Lockwasher (WP 0107, Figure 39, Item 2)
Rivet (WP 0107, Figure 37, Item 1)
Rivet (WP 0107, Figure 38, Item 1)
Rivet (WP 0107, Figure 40, Item 2)
Rivet (WP 0107, Figure 40, Item 5)
Rivnuts (WP 0107, Figure 39, Item 8)
Rivnuts (WP 0107, Figure 40, Items 7 to 11)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source.

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

Insulation should only be removed when necessary to gain access to another component or when replacement of the insulation is necessary.

FRAME ASSEMBLY REPLACEMENT

Disassembly of Informational Plates

1. Drill out four rivets (Figure 1, Item 16) and remove the handbook compartment (Figure 1, Item 1) from just below the larger, right-side door of the ASH (Figure 1, Item 2).

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

NOTE

Informational plates are attached to the exterior of the front of the ASH using either two or four rivets each, depending on the size of the plate. Remove the quantity of rivets that the specific plate configuration requires.

2. Drill out two or four rivets (Figure 1, Item 8), as required, on each of the following plates:
   a. Plate SUPPLY CONNECTION (Figure 1, Item 9).
   b. Plate ARMY SPACE HEATER (Figure 1, Item 10).
   c. Plate LUBRICATION CHART (Figure 1, Item 11).
   d. Plate RETURN CONNECTION (Figure 1, Item 12).
   e. Plate ELECTRICAL POWER LEAD-IN CABLE (Figure 1, Item 13).
   f. Plate J3 REMOTE THERMOSTAT (Figure 1, Item 14).

Disassembly of Lift/Tie-Down Rings

1. The four tie-down rings (Figure 1, Item 15) are attached to the front and rear panels of the ASH frame at the very top corners by two different design methods. The rings are either screwed directly into the frame, or attached using a flat washer, slotted nut, and cotter pin. Remove the tie-down rings from the ASH frame using the method that is consistent with the design configuration used on your unit. Remove the tie-down rings as follows:
   a. For tie-down rings (Figure 1, Item 7) that are screwed directly into the frame, remove by unscrewing the tie-down ring.
   b. For tie-down rings (Figure 1, Item 6) that are attached to the frame with a slotted nut, remove as follows:
      (1) Remove the cotter pin (Figure 1, Item 3) from the slotted nut (Figure 1, Item 4) and discard the pin.
      (2) Remove the slotted nut (Figure 1, Item 4) and flat washer (Figure 1, Item 5) from the threaded end of the tie-down ring (Figure 1, Item 6) inside the ASH.
      (3) With the nut removed, the tie-down ring (Figure 1, Item 6) is now free to be removed from the ASH frame (Figure 1, Item 2).

Disassembly of Internal Power Cable Adapter Cord (J3)

1. Tag and disconnect wires J3-C/TB3-4 (Figure 1, Item 25), J3-B/TB3-3 (Figure 1, Item 26) and J3-A/TB3-2 (Figure 1, Item 27) from the terminal board 3 (TB3) (Figure 1, Item 17).
2. Tag and disconnect the braided wire (Figure 1, Item 28) from the ground post (Figure 1, Item 29).
3. Remove the wire tie-down straps (Figure 1, Item 18), as required.
4. Slide the wire bundle, consisting of wires J3-C, J3-B, J3-A (Figure 1, Items 25, 26, and 27) and the braided ground wire (Figure 1, Item 28), through wire clamps running along the inside top edge of the ASH frame (Figure 1, Item 24) to the front panel connection labeled “J3 Remote Thermostat” (Figure 1, Item 23) next to the damper grill.
5. Drill out the rivet (Figure 1, Item 21) and remove the cover (Figure 1, Item 22) to the J3 connector (Figure 1, Item 19).
6. Remove the ring nut (Figure 1, Item 20) that secures the head of the J3 connector (Figure 1, Item 19) to the front panel of the ASH.
7. Remove the internal power cable adapter cord.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

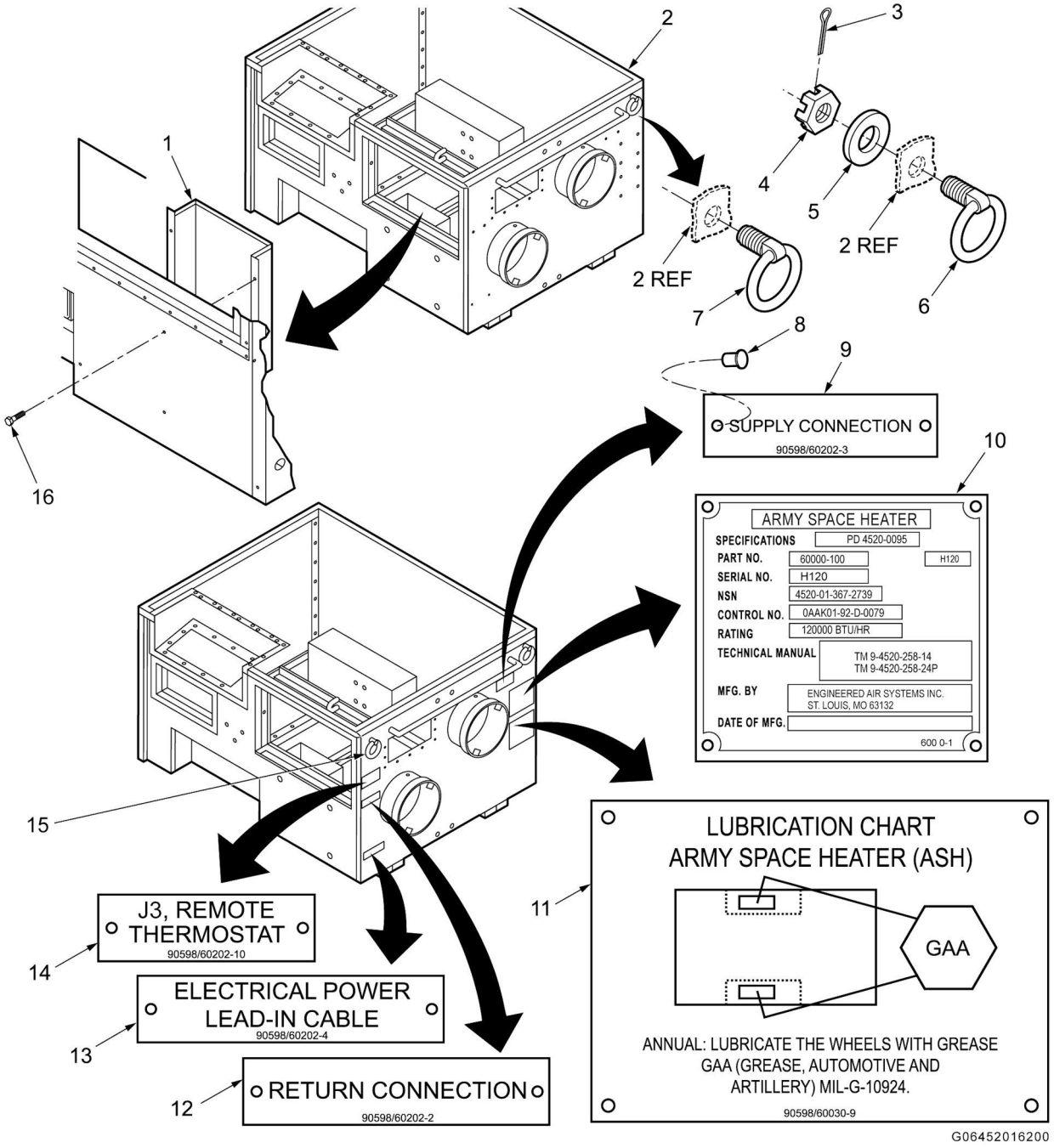


Figure 1. Disassembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3) (Sheet 1 of 2).

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

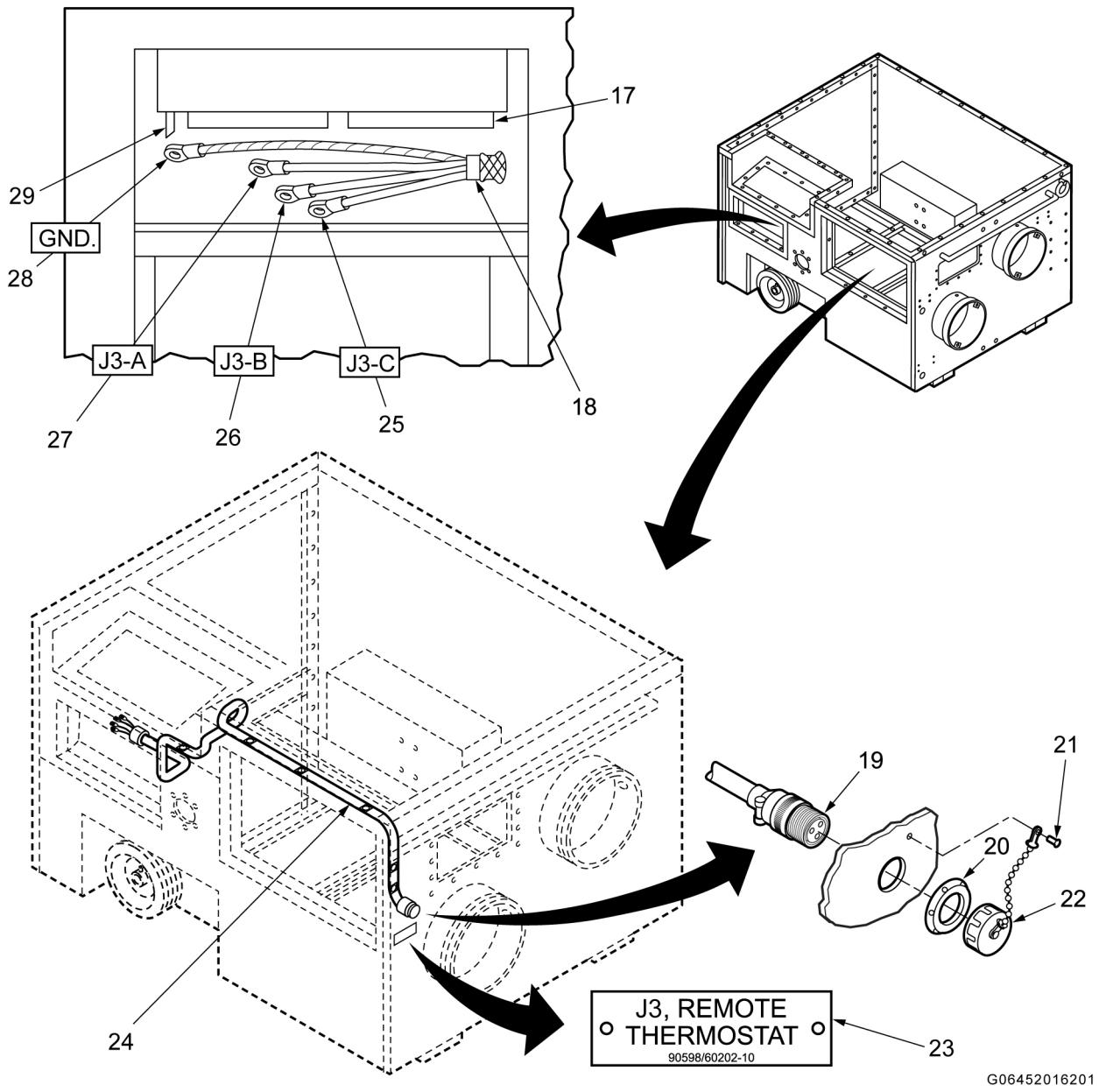


Figure 1. Disassembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3) (Sheet 2 of 2).

Disassembly of Fuel Drain Ring/Cover & Electrical Power Lead-In

1. As a precondition of the disassembly and removal of the fuel drain ring/cover and the electrical power lead-in, the fuel tank has already been removed from the ASH in accordance with WP 0031; and the electrical power cable has already been removed from the ASH in accordance with WP 0044.
2. Remove the four screws (Figure 2, Item 8), four lockwashers (Figure 2, Item 7), and four flat washers (Figure 2, Item 6) that attach the fuel drain cover (Figure 2, Item 5) and gasket (Figure 2, Item 4) to the fuel drain ring (Figure 2, Item 2) on the floor of the ASH frame. The fuel drain cover and gasket are now free to be removed from the ring.
3. Remove the gasket (Figure 2, Item 4) from the fuel drain cover (Figure 2, Item 5). Discard the gasket.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

4. Remove eight rivets (Figure 2, Item 3) and eight backup washers (Figure 2, Item 1) that attaches the fuel drain ring (Figure 2, Item 2) to the floor of the ASH frame. The rivets will have to be drilled out. The ring is now free to be removed from the floor of the ASH frame.
5. Remove the nut ring (Figure 2, Item 9), O-ring packing (Figure 2, Item 10), and fitting (Figure 2, Item 11) from the power supply connection labeled “Electrical Power Lead-In Cable” (Figure 2, Item 12) on the front panel of the ASH. Discard the O-ring packing.

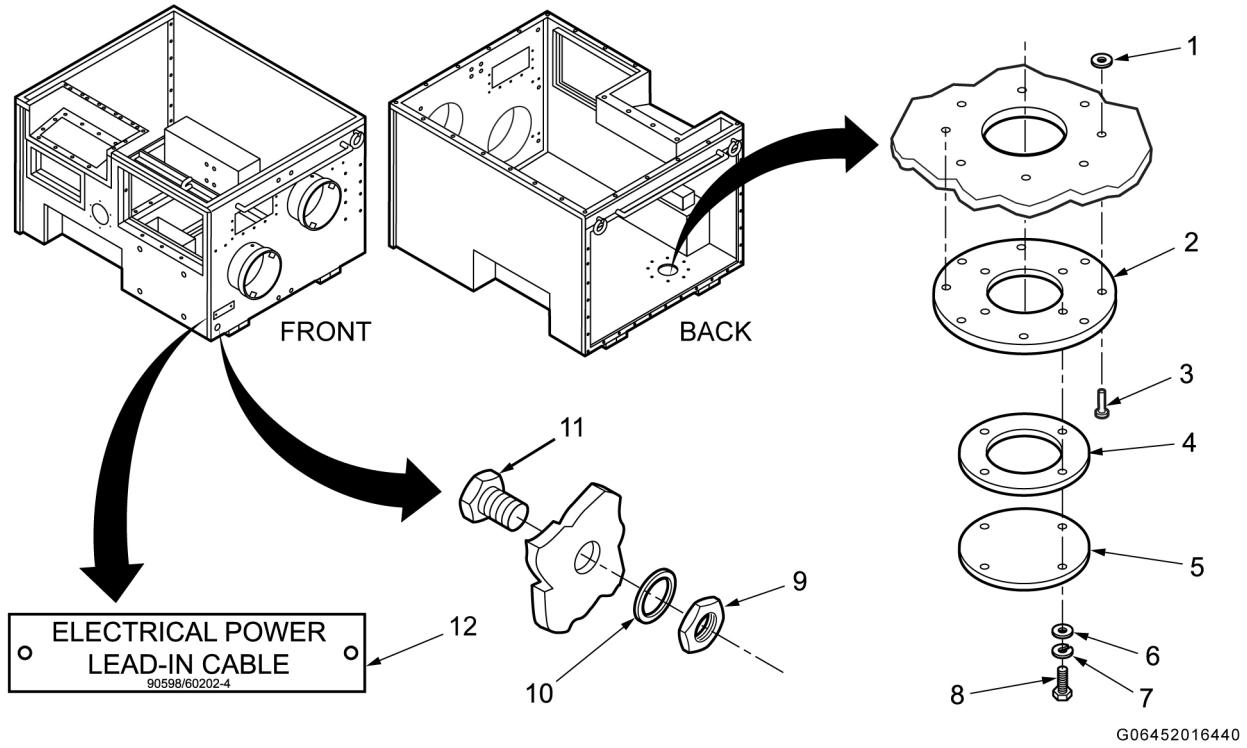


Figure 2. Disassembly of Fuel Drain Ring/Cover & Electrical Power Lead-In.

Disassembly of Heat Exchanger Brace & Grommet

Overview. There are two braces that form the top of the ASH frame. The center brace that attaches to the heat exchanger shell via the brace tab is referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace is referred to as the secondary brace and is located closer to the rear of the exchanger. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and is not removed from the ASH frame. The two braces are clearly identified in Figure 1 in WP 0037 or WP 0038 along with the other major components of the heat exchanger.

As a precondition for the disassembly/removal of the primary brace at this stage of the frame disassembly, the user should recognize that this is addressing a highly unusual condition since the heat exchanger has already been removed from the ASH in accordance with WP 0037 or WP 0038, which calls for removing this brace in the course of removing the heat exchanger. So typically, this brace would not be present in the absence of the heat exchanger in the manner being addressed here. It would normally have been removed when the heat exchanger was removed.

1. Remove one nut (Figure 3, Item 12), one lockwasher (Figure 3, Item 11), two flat washers (Figure 3, Item 9) and one bolt (Figure 3, Item 10) from the far left side of the primary brace (Figure 3, Item 8). Discard the lockwashers.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

2. Remove one nut (Figure 3, Item 15), one lockwasher (Figure 3, Item 16), two flat washers (Figure 3, Item 7) and one bolt (Figure 3, Item 6) from the mid-right side of the primary brace (Figure 3, Item 8). Discard the lockwashers.
3. Remove one nut (Figure 3, Item 17), one lockwasher (Figure 3, Item 18), two flat washers (Figure 3, Item 5), ground wire (Figure 3, Item 19), star lockwasher (Figure 3, Item 20), and one bolt (Figure 3, Item 4) from the far-right side of the primary brace (Figure 3, Item 8). Discard the lockwashers.
4. Normally, the last fastener to be removed from the primary brace (Figure 3, Item 8) would be the screw at the brace tab (Figure 3, Item 13) connecting the brace to the heat exchanger. However, with the heat exchanger already removed from the ASH frame while keeping this brace in place, which is not standard practice in accordance with WP 0037or WP 0038, this screw has already been removed from the brace to free the heat exchanger for removal.
5. The primary brace (Figure 3, Item 8) and the attached exhaust stack grommet (Figure 3, Item 14) are now free to be removed from the ASH frame.
6. The exhaust stack grommet (Figure 3, Item 14) will be removed from the ASH frame with the brace. The maintainer should inspect it for serviceability and evaluate its condition. Depending on its condition, the old grommet may be left in place and reused if it's in good condition; or removed from the brace and replaced with a new one if it's worn or in disrepair, at the discretion of the maintainer.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

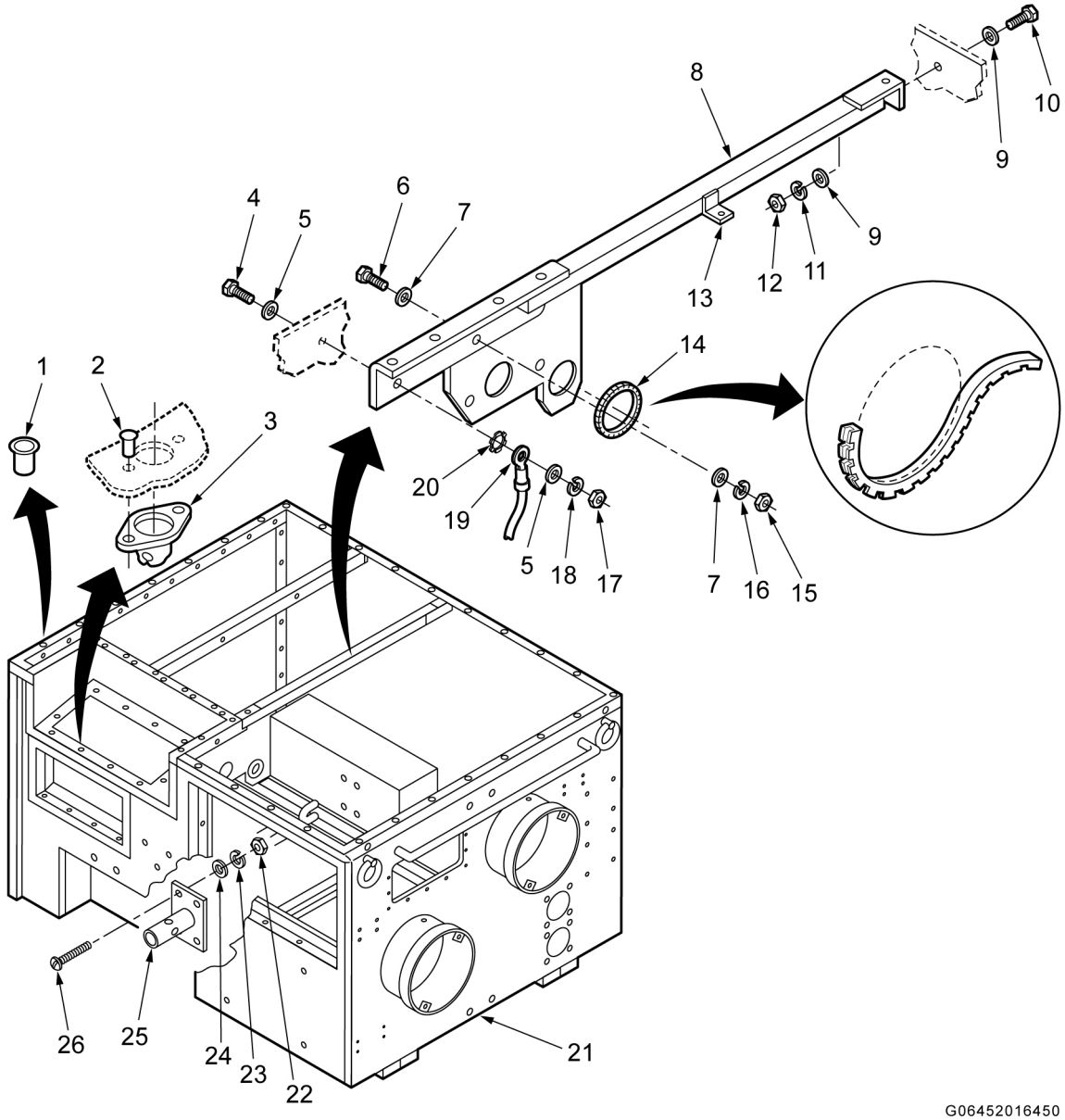


Figure 3. Disassembly of Heat Exchanger Brace and Wheel Pivot.

Removal of Rivnuts and Receptacles

1. Remove power receptacles (Figure 3, Item 3), as required, by drilling out two rivets on each side (Figure 3, Item 2) that secure the receptacles in place on the ASH frame.
2. Remove rivnuts (Figure 3, Item 1), as required.

Disassembly of Wheel Pivots

1. As a precondition of the disassembly and removal of the wheel pivot from the ASH frame, the wheel assembly consisting of the tire/wheel and the mounting arm has already been removed from the wheel wells of the ASH frame in accordance with WP 0047.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

2. Remove the four nuts (Figure 3, Item 22), four lockwashers (Figure 3, Item 23), four flat washers (Figure 3, Item 24), and four bolts (Figure 3, Item 26) that attach the wheel pivot (Figure 3, Item 25) to the ASH frame (Figure 3, Item 21).
3. The wheel pivot (Figure 3, Item 25) is now free to be removed from the ASH frame.

Removal of Insulation

1. Insulation should only be removed when necessary to gain access to another component or when replacement of the insulation is necessary. Insulation locations on the frame assembly are identified in Figure 4 in this work package. The method of using this illustration to find the specifications for a specific piece of insulation in the List of Manufactured Items (WP 0088) is outlined below:
   a. Locate your specific piece of insulation on the ASH frame assembly illustration of Figure 4 in this work package. Note the call out number, which will be referred to in the List of Manufactured Items (WP 0088) as the INDEX number.
   b. Take this INDEX/call-out number from Figure 4 and use it in Table 1 below to find the applicable Frame Insulation Figure in the Illustrated List of Manufactured Items (WP 0088).
   c. Note that INDEX/call out numbers 18 through 38 are for rectangular pieces of insulation whose dimensions are specified in a single Frame Insulation Table in Figure 9 of the List of Manufactured Items (WP 0088); whereas INDEX/call out numbers 39 through 50 will refer to the other specific frame insulation figures in WP 0088.

Table 1. Frame Assembly Insulation: WP 0049, Figure 4 Call-Out Number Cross Reference

Figure 4 Call-Out Number in WP 0049	List Manufactured Items in WP 0088
18 – 38	Figure 9
39	Figure 11
40	Figure 12
41	Figure 13
42	Figure 14
43	Figure 15
44	Figure 16
45	Figure 17
46	Figure 18
47	Figure 19
48	Figure 20
49	Figure 21
50	Figure 21

2. Note also that the ASH's exterior panels – front, back, right-side, and top – are not considered part of the assembly frame, so the insulation for these panels is excluded from Figure 4 in this work package. For your convenience, direction to the List of Manufactured Items (WP 0088) or the Repair Parts and Special Tools List (RPSTL) (WP 0095) for exterior panel insulation is provided separately in Table 2 in this work package.

Table 2. Exterior Panel Insulation Cross Reference

Panel Description	RPSTL Index Number in WP 0095	Illustrated List of Manufactured Items in WP 0088
Rear Panel	Figure 5, Item 46	Figure 1
Rear Panel	Figure 5, Item 44	Figure 4
Top Panel No. 1	Figure 4, Item 5	Figure 5
Top Panel No. 2	Figure 4, Item 6	Figure 6
Top Panel No. 3	Figure 4, Item 7	Figure 7
Right-Side Panel, Front Door	Figure 6, Item 12	Figure 2
Right-Side Panel, Rear Door	Figure 7, Item 12	Figure 3
Left-Side Panel	No insulation	No insulation

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

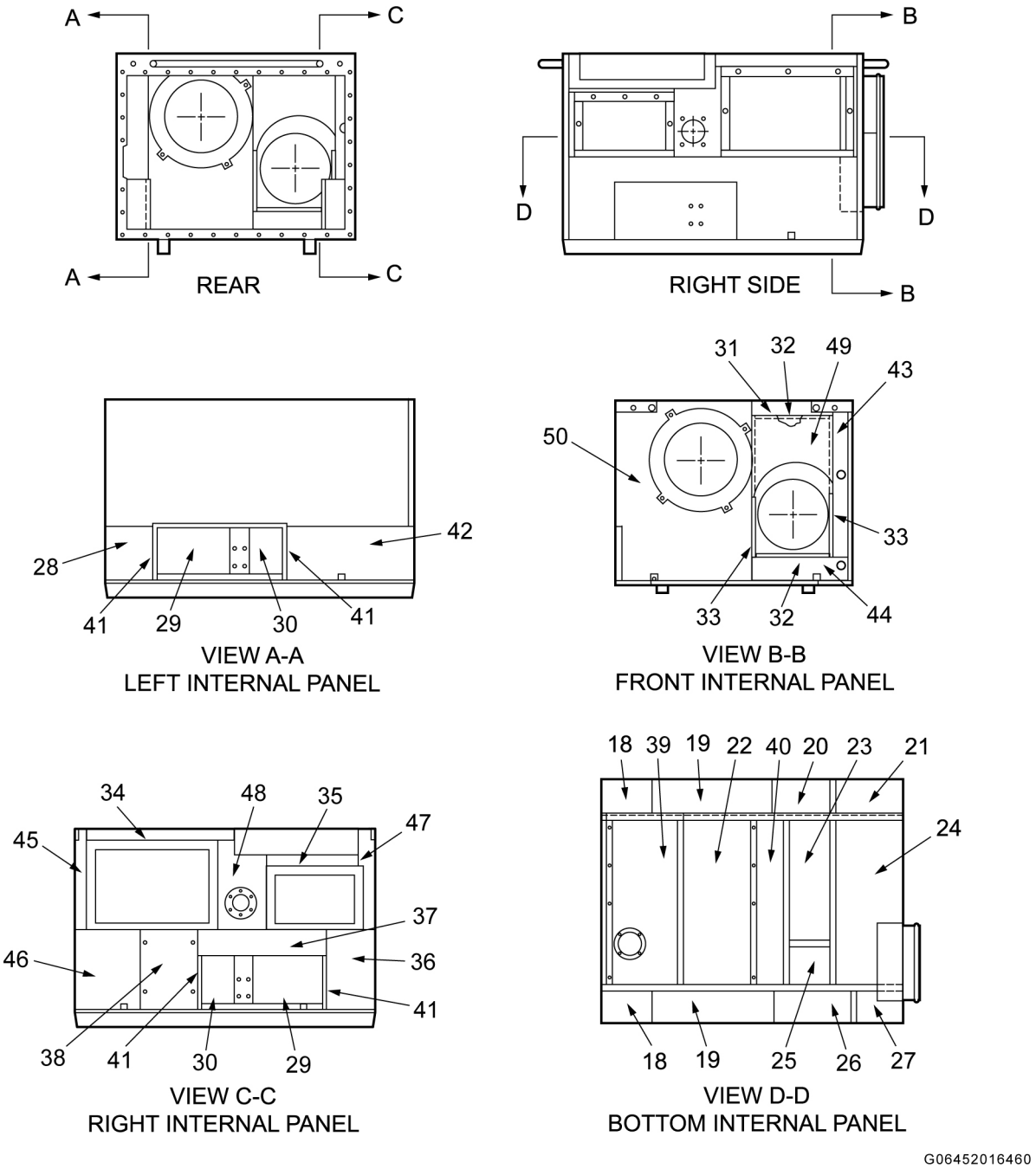


Figure 4. Removal of Insulation.

Assembly of Informational Plates

NOTE

Informational plates are attached to the front panel of the ASH using two or four rivets each, depending on the size of the plate. Install the quantity of rivets that the configuration requires.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

1. Install the following informational plates using two or four rivets each (Figure 5, Item 8), as required:
   a. Plate SUPPLY CONNECTION (Figure 5, Item 9).
   b. Plate ARMY SPACE HEATER (Figure 5, Item 10).
   c. Plate LUBRICATION CHART (Figure 5, Item 11).
   d. Plate RETURN CONNECTION (Figure 5, Item 12).
   e. Plate ELECTRICAL POWER LEAD-IN CABLE (Figure 5, Item 13).
   f. Plate J3 REMOTE THERMOSTAT (Figure 5, Item 14).
2. Install the handbook compartment (Figure 5, Item 1) on the interior of the right-side panel just below the larger front door using four rivets (Figure 5, Item 16) through the exterior right-side panel of the ASH frame.

Assembly of Lift/Tie-Down Rings

1. There are four lift/tie-down rings on the ASH frame (Figure 5, Item 15), two on the front panel and two on the back panel, and two different design methods are used to attach the tie-down rings to the frame. Install the four tie-down rings using the method outlined below that is consistent with the design configuration used on the ASH that you are operating:
   a. If the ASH has tie-down rings (Figure 5, Item 15) that screw directly into frame (Figure 5, Item 7), install the four tie-down rings by screwing the threaded end of the ring directly into the frame. Tighten rings hand tight. Check to determine if the ring hangs down on the exterior panel. If so, that's good and installation is complete. If not, back the nut off sufficiently until the ring hangs down.
   b. If the ASH has tie-down rings (Figure 5, Item 6) that attach to the frame with a slotted nut (Figure 5, Item 4), install the four tie-down rings and nuts as follows:
      (1) Insert the threaded end of the tie-down ring (Figure 5, Item 6) through the frame (Figure 5, Item 2).
      (2) Install the flat washer (Figure 5, Item 5) and the slotted nut (Figure 5, Item 4) on the threaded end of the tie-down ring (Figure 5, Item 6) inside the ASH. Tighten rings hand tight. Check to determine if the ring hangs down on the exterior panel. If so, that's good and installation is complete. If not, back the nut off sufficiently until the ring hangs down.
      (3) Install the cotter pin (Figure 5, Item 3) through the slotted nut (Figure 5, Item 4) and the hole in the threaded end of the tie-down ring (Figure 5, Item 6). Slotted nut may be loosened slightly to align the nearest slot in the nut with the hole in the tie-down ring.

Assembly of Internal Power Cable Adapter Cord (J3)

1. Place the wire bundle of the J3 connector (Figure 5, Item 19) into the interior of the ASH.
2. Install the J3 connector (Figure 5, Item 19) and ring nut (Figure 5, Item 20) onto the front panel at the proper location marked with nameplate “J3 Remote Thermostat” (Figure 5, Item 23) next to the damper grill. Tighten ring nut sufficiently to secure J3 connector against the front panel.
3. Install the rivet (Figure 5, Item 21) that attaches the chain to the front panel of the ASH; then, screw the cover (Figure 5, Item 22) onto the J3 connector (Figure 5, Item 19).
4. Slide the wire bundle, consisting of wires J3-C, J3-B, J3-A (Figure 5Items 25, 26, and 27) and the braided ground wire (Figure 5, Item 28), through the wire clamps running along the inside top edge of the ASH (Figure 5, Item 24) to the terminal board 3 (TB3) (Figure 5, Item 17).
5. Connect the individual wires (emanating from this J3 wire bundle) to terminal board TB3 (Figure 5, Item 17). as follows:
   a. Connect wire J3-C to TB3-4 (Figure 5, Item 25).
   b. Connect wire J3-B to TB3-3 (Figure 5, Item 26).
   c. Connect wire J3-A to TB3-2 (Figure 5, Item 27).
6. Connect the braided ground wire (Figure 5, Item 28) to the ground post (Figure 5, Item 29) at the terminal box.
7. Install wire tie-down straps (Figure 5, Item 18), as required.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

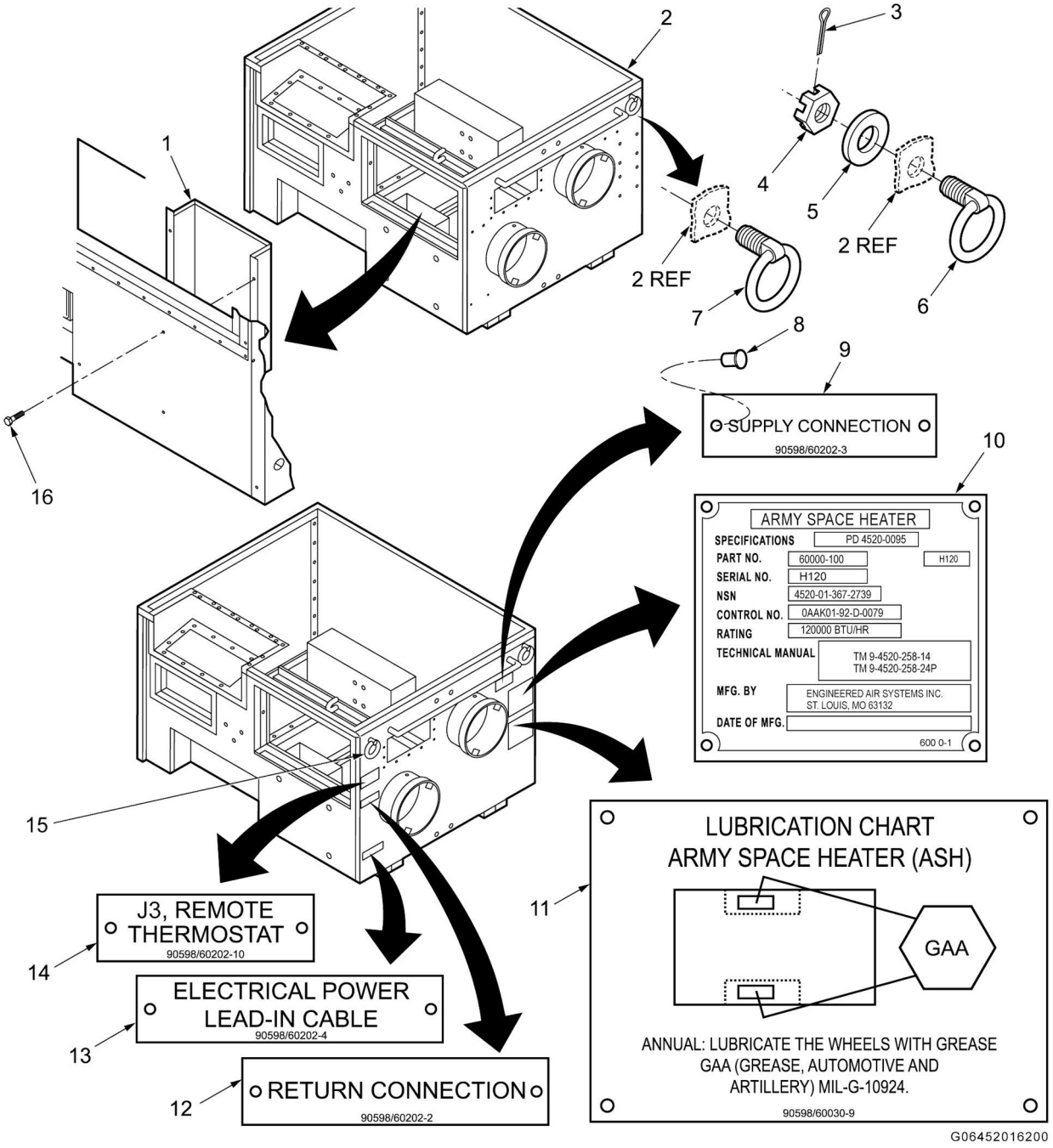


Figure 5. Lift/Tie-Down Rings, Data Plates, and Internal Power Cable Adapter Cord (J3) Assembly (Sheet 1 of 2).

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

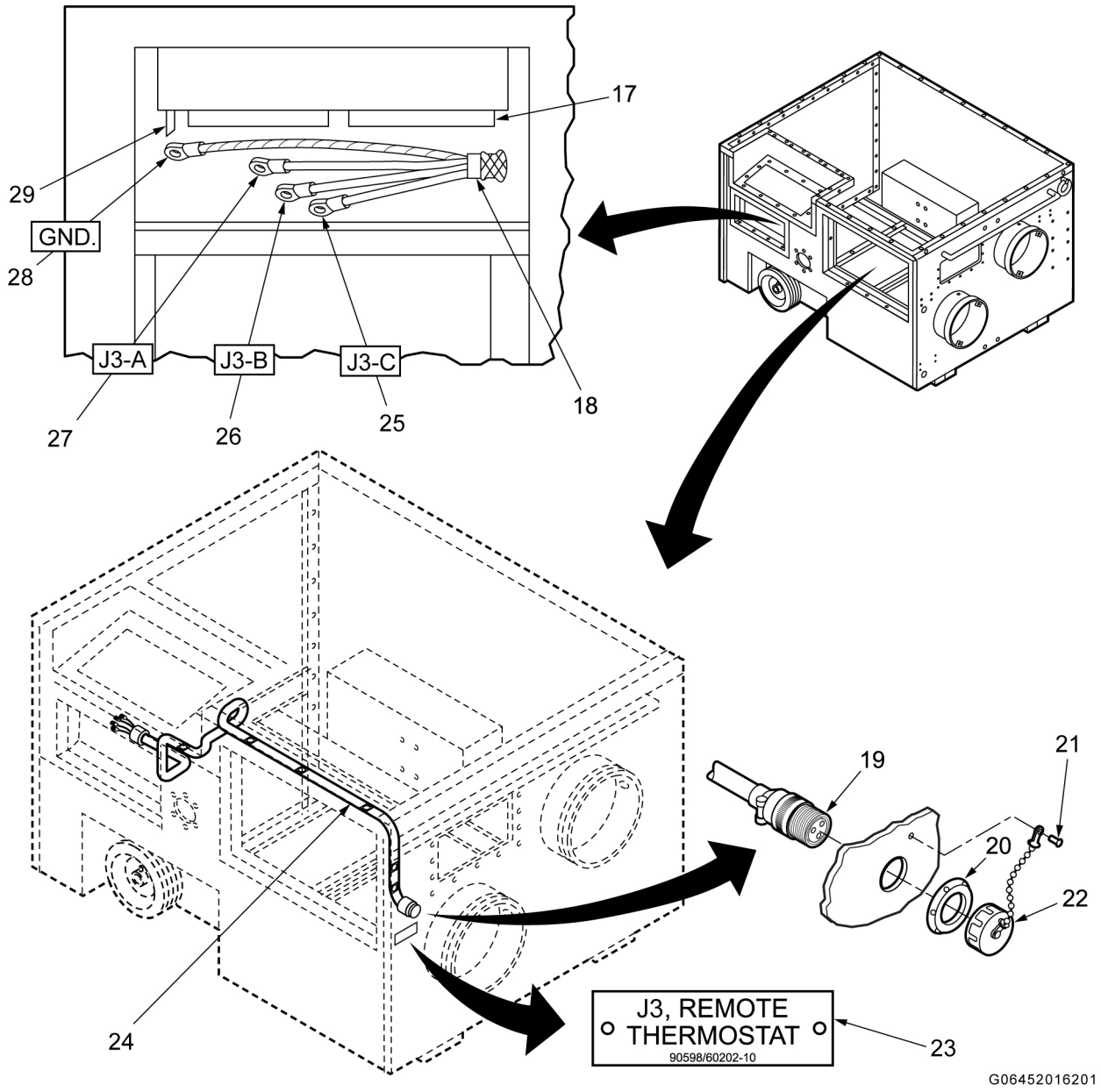


Figure 5. Lift/Tie-Down Rings, Data Plates, and Internal Power Cable Adapter Cord (J3) Assembly (Sheet 2 of 2).

Assembly of Fuel Drain Ring/Cover & Electrical Power Lead-In

As a precondition of the assembly/installation of the fuel drain ring/cover and the electrical power lead-in, the fuel tank has been removed from the ASH in accordance with WP 0031; and the electrical power cable has been removed from the ASH in accordance with WP 0044.

1. Install the nylon, liquid-tight fitting (Figure 6, Item 11), new O-ring packing (Figure 6, Item 10), and steel ring nut (Figure 6, Item 9) at the power supply connection labeled “Electrical Power Lead-In Cable” (Figure 6, Item 12) on the front panel of the ASH.
2. Install the fuel drain ring (Figure 6, Item 2) on the floor of the ASH frame and secure with eight rivets (Figure 6, Item 3) and eight backup washers (Figure 6, Item 1).
3. Mount the gasket (Figure 6, Item 4) on the drain cover (Figure 6, Item 5), aligning the four holes in the gasket with the holes in the cover.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

4. Install the drain cover (Figure 6, Item 5) and gasket (Figure 6, Item 4) on the fuel drain ring (Figure 6, Item 2) and secure with four screws (Figure 6, Item 8), four new lockwashers (Figure 6, Item 7), and four flat washers (Figure 6, Item 6) to the ring on the floor of the ASH frame.

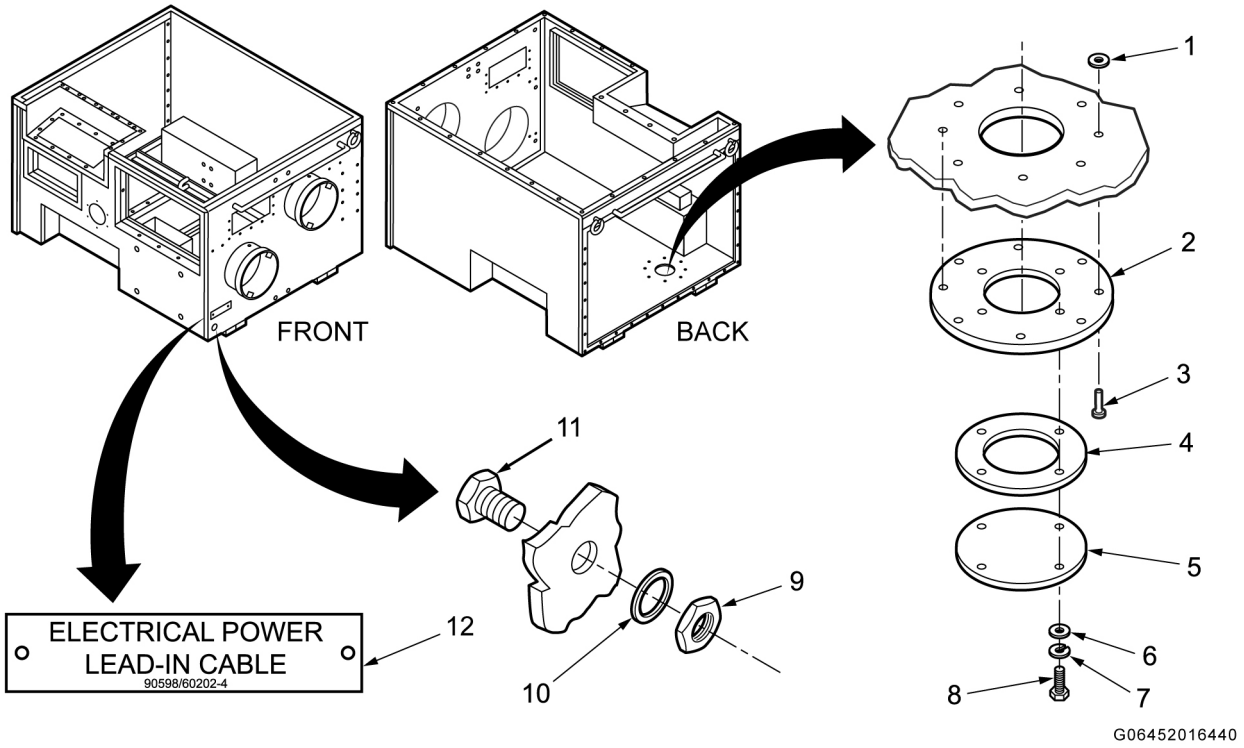


Figure 6. Assembly of Fuel Drain Ring/Cover & Electrical Power Lead-In.

Assembly of Heat Exchanger Brace and Grommet

1. Install two flat washers (Figure 7, Item 9), bolt (Figure 7, Item 10), new lockwasher (Figure 7, Item 11), and nut (Figure 7, Item 12) to secure the left end of the primary brace (Figure 7, Item 8) to the ASH frame.
2. Install two flat washers (Figure 7, Item 5), bolt (Figure 7, Item 4), star lockwasher (Figure 7, Item 20), ground lead (Figure 7, Item 19), new lockwasher (Figure 7, Item 18), and nut (Figure 7, Item 17) to secure the far right side of the primary brace (Figure 7, Item 8) to the ASH frame.
3. Install two flat washers (Figure 7, Item 7), one bolt (Figure 7, Item 6), one new lockwasher (Figure 7, Item 16), and one nut (Figure 7, Item 15) to secure the mid-right side of the primary brace (Figure 7, Item 8) to the ASH frame.
4. The exhaust stack grommet (Figure 7, Item 14) will be installed with the brace. When the brace was removed, the maintainer was instructed to inspect it for serviceability and evaluate its condition. Depending on its condition, the old grommet should be left in place and reused if it's in good condition; or removed from the brace and replaced with a new one if it's worn or in disrepair, at the discretion of the maintainer.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

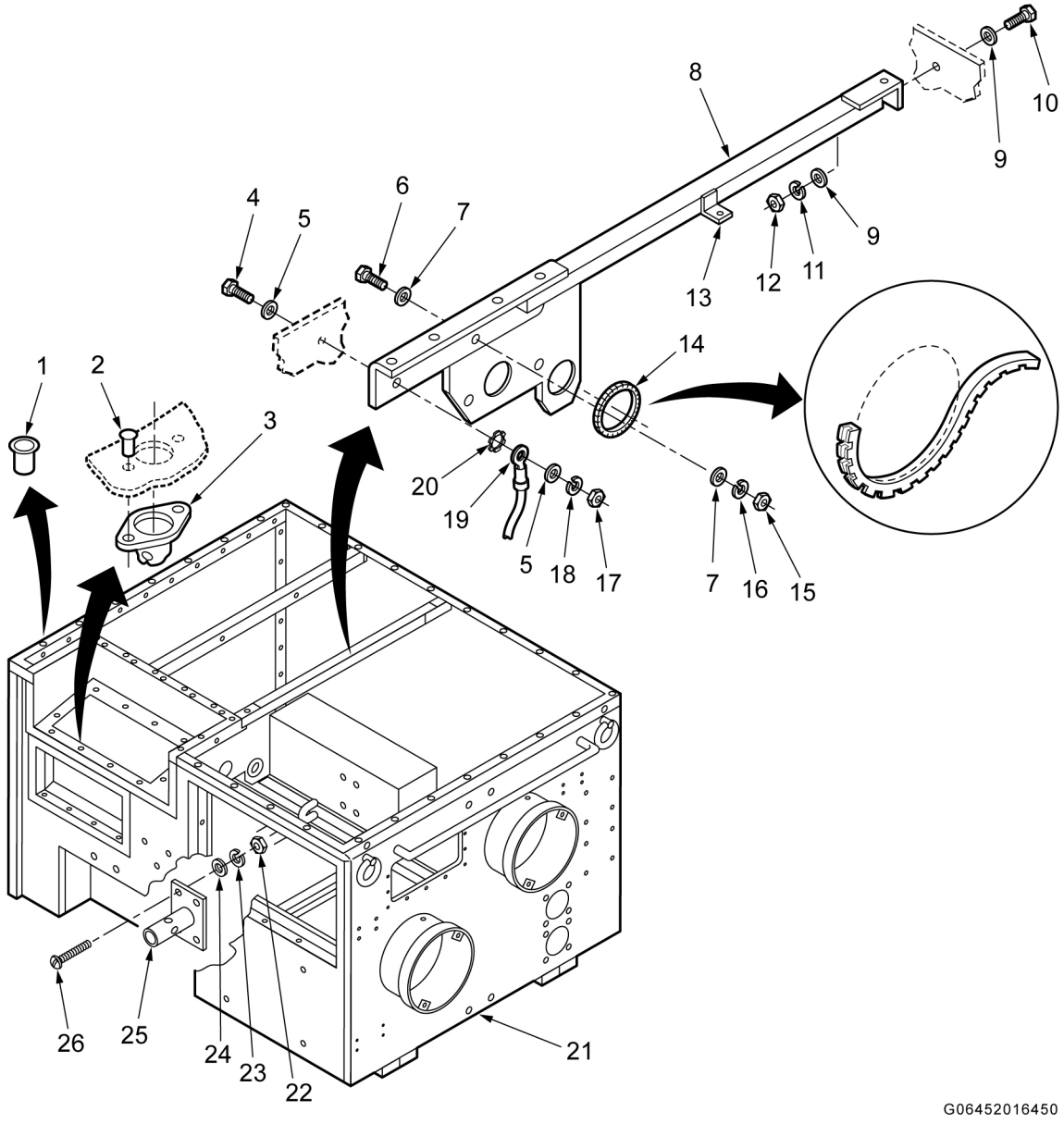


Figure 7. Assembly of Heat Exchanger Brace and Wheel Pivot.

Installation of Rivnuts and Receptacles

1. Remove power receptacles (Figure 7, Item 3), as required, by drilling out two rivets on each side (Figure 7, Item 2) that secure the receptacles in place on the ASH frame.
2. Remove rivnuts (Figure 7, Item 1), as required.

Assembly of Wheel Pivots

1. Install the four nuts (Figure 7, Item 22), four lockwashers (Figure 7, Item 23), four flat washers (Figure 7, Item 24), and four bolts (Figure 7, Item 26) that attach the wheel pivot (Figure 7, Item 25) to the ASH frame (Figure 7, Item 21).
2. Tighten fasteners firmly to secure wheel pivot (Figure 7, Item 25) to unit frame.

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

Installation of Insulation

1. Install insulation as required. Installation locations on the frame assembly are identified in Figure 8 in this work package. The method of using this illustration to find the specifications for a specific piece of insulation in the List of Manufactured Items (WP 0088) is outlined below:
   a. Locate your specific piece of insulation on the ASH frame assembly illustration of Figure 8 in this work package. Note the call out number, which will be referred to in the List of Manufactured Items (WP 0088) as the INDEX number.
   b. Take this INDEX/call-out number from Figure 8 and use it in Table 1 below to find the applicable Frame Insulation Figure in the Illustrated List of Manufactured Items (WP 0088).
   c. Note that INDEX/call out numbers 18 through 38 are for rectangular pieces of insulation whose dimensions are specified in a single Frame Insulation Table in of the List of Manufactured Items (WP 0088); whereas INDEX/call out numbers 39 through 50 will refer to the other specific frame insulation figures in WP 0088.

Table 3. Frame Assembly Insulation: WP 0049, Figure 8 Call-Out Number Cross Reference

Figure 8 Call-Out Number in WP 0049	List Manufactured Items in WP 0088
18 – 38	Figure 9
39	Figure 11
40	Figure 12
41	Figure 13
42	Figure 14
43	Figure 15
44	Figure 16
45	Figure 17
46	Figure 18
47	Figure 19
48	Figure 20
49	Figure 21
50	Figure 21

2. Note also that the ASH's exterior panels – front, back, right-side, and top – are not considered part of the assembly frame, so the insulation for these panels is excluded from Figure 8 in this work package. For your convenience, direction to the List of Manufactured Items (WP 0088) or the Repair Parts and Special Tools List (RPSTL) (WP 0095) for exterior panel insulation is provided separately in Table 2 in this work package.

Table 4. Exterior Panel Insulation Cross Reference

Panel Description	RPSTL Index Number in WP 0095	Illustrated List of Manufactured Items in WP 0088
Rear Panel	Figure 5, Item 46	Figure 1
Rear Panel	Figure 5, Item 44	Figure 4
Top Panel No. 1	Figure 4, Item 5	Figure 5
Top Panel No. 2	Figure 4, Item 6	Figure 6
Top Panel No. 3	Figure 4, Item 7	Figure 7
Right-Side Panel, Front Door	Figure 6, Item 12	Figure 2
Right-Side Panel, Rear Door	Figure 7, Item 12	Figure 3
Left-Side Panel	No insulation	No insulation

FRAME ASSEMBLY REPLACEMENT - (CONTINUED)

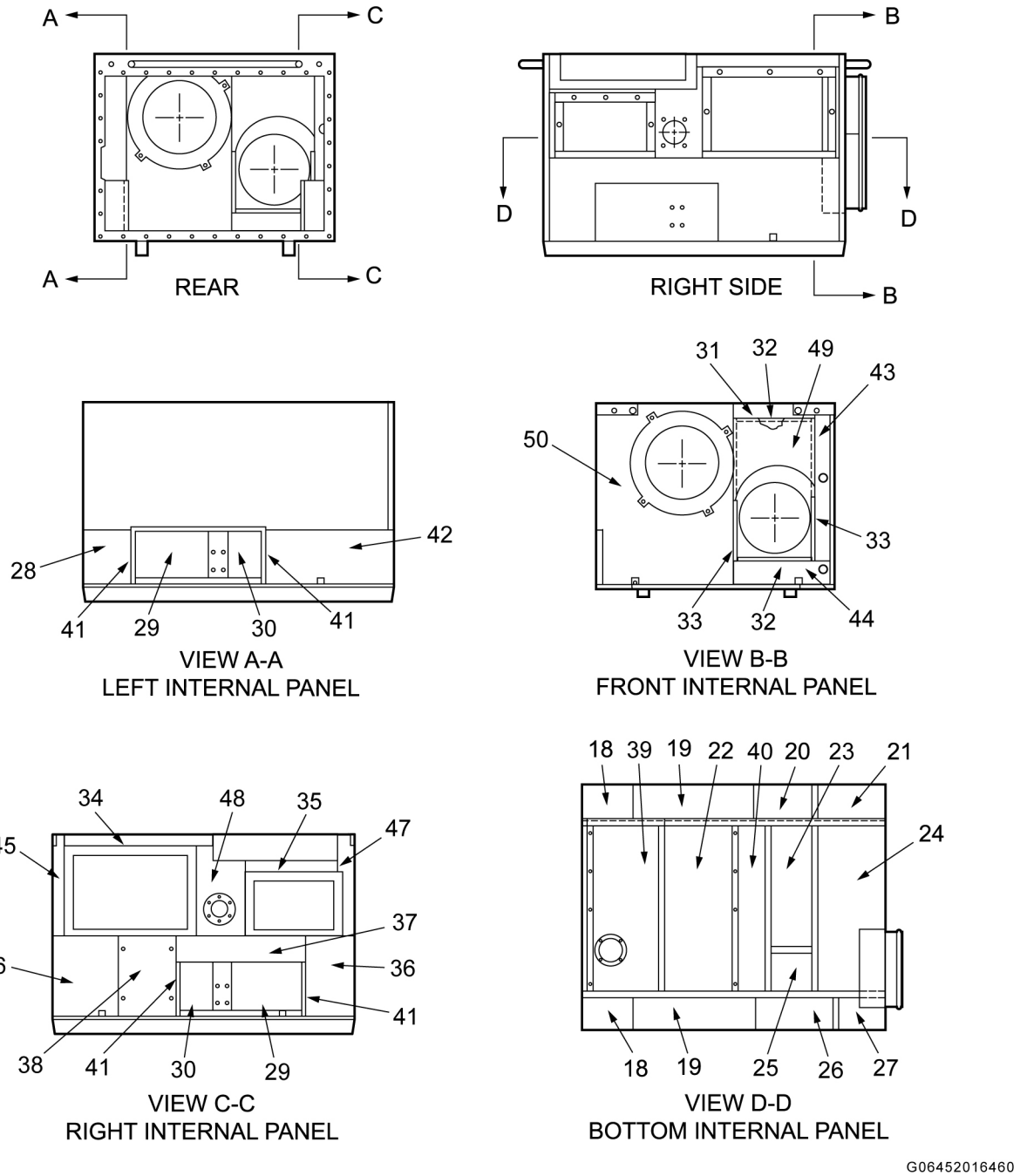


Figure 8. Installation of Insulation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FLEXIBLE AIR DUCTS SERVICE AND REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)
Tool Set, SATS (WP 0117, Item 19)

Materials/Parts
Detergent, General Purpose (WP 0116, Item 3)
Duct, Return/Supply Air (WP 0114, Table 1. Item 1)
Rag, Wiping (WP 0116, Item 11)
Tape, Pressure-Sensitive Adhesive (WP 0116, Item 16)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

FLEXIBLE AIR DUCTS SERVICE AND REPAIR

Inspection
1. Inspect clamps (Figure 1, Item 1) for damaged screw heads, deformed slots on strap, corrosion, or broken strap.
2. Inspect duct (Figure 1, Item 3) for rips, tears, and deterioration.
3. Inspect duct (Figure 1, Item 3) stiffener for bends and breaks.

Service
1. Clean the duct (Figure 1, Item 3) using a rag and a mild solution of general-purpose detergent and water.
2. Rinse thoroughly with clean water.
3. Allow to dry completely.

NOTE

Removal and installation is the same for both ducts.

Removal
1. Loosen clamps (Figure 1, Item 1) on both ends of duct (Figure 1, Item 3) and remove from unit (Figure 1, Item 2) and shelter connector.

Repair
1. Repair small tears and holes in ducts by patching with pressure sensitive tape.
2. Replace ducts (Figure 1, Item 3) if clamps (Figure 1, Item 1) are damaged or large tears or holes are present in fabric.

Installation
1. Install duct (Figure 1, Item 3) on unit (Figure 1, Item 2) with indicator arrow facing the direction of air flow.
2. Install other end of duct (Figure 1, Item 3) to shelter connector.
3. Tighten clamps (Figure 1, Item 1) on both ends of duct (Figure 1, Item 3) securely.

FLEXIBLE AIR DUCTS SERVICE AND REPAIR - (CONTINUED)

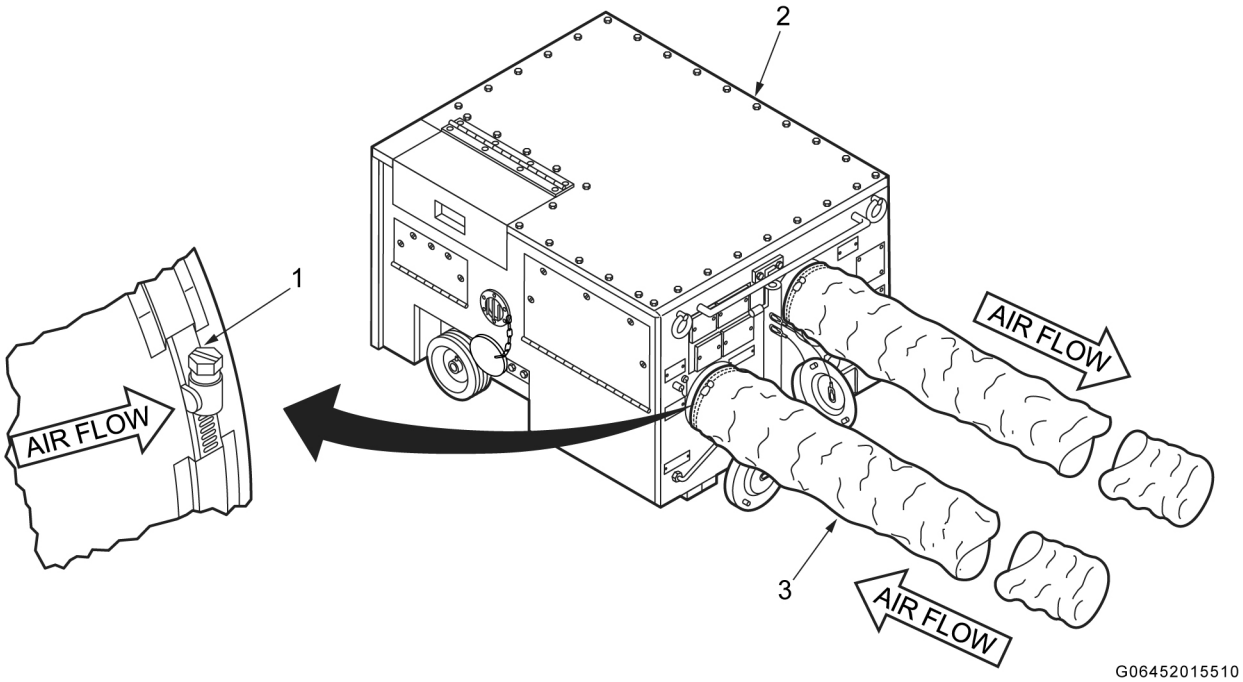


Figure 1. Air Duct Inspection, Service, Removal, Repair, and Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CONTROL BOX COVER ASSEMBLY REPAIR

INITIAL SETUP:

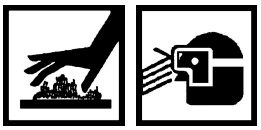
Tools and Special Tools
Bit Set (Tool Set, SATS) (WP 0117, Item 1)
Drill (Tool Set, SATS) (WP 0117, Item 4)
Riveter, Blind (WP 0117, Item 12)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Hinge (WP 0095, Figure 3, Item 7)
Rivet, Blind (WP 0095, Figure 3, Item 2)
Rivet, Blind (WP 0095, Figure 3, Item 5)
Rivet, Blind (WP 0095, Figure 3, Item 8)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING



Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

CONTROL BOX COVER ASSEMBLY REPAIR

Repair is limited to the replacement of defective parts. Disassemble the control box cover assembly only to the extent required to make the repair or replace the defective part. Remove and install components only when necessary to accomplish the repair.

Removal

1. Remove four screws (Figure 1, Item 1) connecting the cover hinge to the ASH (Figure 1, Item 9).
2. Pull cover (Figure 1, Item 8) up to unlatch the cover-securing clip (Figure 1, Item 11) from the keeper bar (Figure 1, Item 7) and remove cover from the ASH.

Disassembly

1. Drill out rivet (Figure 1, Item 2), remove clip (Figure 1, Item 11) and spacer (Figure 1, Item 10).
2. Drill out four rivets (Figure 1, Item 3) and remove the hinge (Figure 1, Item 4) from the cover.
3. Drill out the rivets (Figure 1, Item 5) connecting the instruction plate (Figure 1, Item 6) to the cover. Depending on the model of the ASH, there may be six or 14 rivets to drill out.
4. Separate the cover from the instruction plate.

Assembly

NOTE

If hinge needs replacement, see (WP 0095, Figure 3, Item 7) for details.
See (WP 0095, Figure 3Items 2, 5, and 8) for correct blind-rivet replacements.

1. Position hinge (Figure 1, Item 4) on cover (Figure 1, Item 8) and secure with four rivets (Figure 1, Item 3).
2. Reattach instruction plate to interior of cover with the appropriate number of rivets (Figure 1, Item 5); make sure that the plate will be right-side up when cover is opened.

CONTROL BOX COVER ASSEMBLY REPAIR - (CONTINUED)

3. Position spacer (Figure 1, Item 10) and clip (Figure 1, Item 11) on inside of cover (Figure 1, Item 8) and secure with rivet (Figure 1, Item 2).

Installation

1. Orient the cover assembly (Figure 1, Item 8) correctly over the ASH (Figure 1, Item 9) so that the clip (Figure 1, Item 11) aligns with the keeper bar (Figure 1, Item 7); push down on the cover to seat it over the controls.
2. Align the four holes in the hinge (Figure 1, Item 4) and unit (Figure 1, Item 9).
3. Apply anti-seize compound to four screws (Figure 1, Item 1) and install them through the hinge (Figure 1, Item 4) and into the ASH.

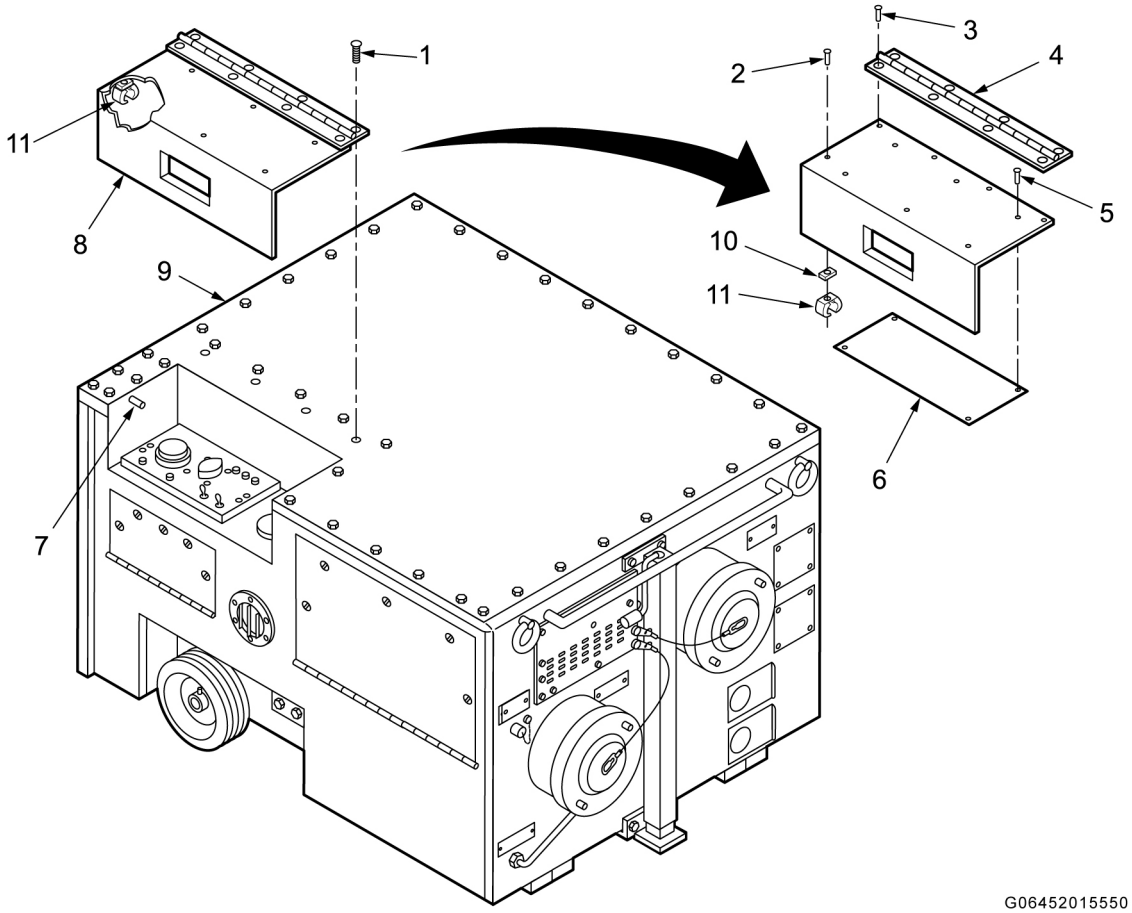


Figure 1. Control Box Cover Removal, Disassembly, Assembly, and Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TOP PANEL ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Gasket Punch Set (Tool Set, SATS) (WP 0117, Item 7)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Gasket x 2 (WP 0095, Figure 4, Item 8)
Gasket x 2 (WP 0095, Figure 4, Item 9)
Gasket (WP 0095, Figure 4, Item 10)
Gasket (WP 0095, Figure 4, Item 11)
Gasket (WP 0095, Figure 4, Item 12)
Insulation (WP 0088, Figure 5)
Insulation (WP 0088, Figure 6)
Insulation (WP 0088, Figure 7)
Lockwasher (WP 0095, Figure 4, Item 2)
Sealing Compound (WP 0116, Item 12)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Control box cover removed, WP 0018

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

TOP PANEL ASSEMBLY REPAIR

Disassemble only to the level required to make repairs. Repair is limited to replacement of defective parts.

Removal

NOTE

Depending on the ASH model, the top panel is attached using twenty-eight or thirty-eight sets of hardware. Remove the quantity of hardware required by the ASH under repair. Panels are interchangeable with all units.

1. Remove screws (Figure 1, Item 2), lockwashers (Figure 1, Item 3), and flat washers (Figure 1, Item 4) from top panel (Figure 1, Item 1). Discard lockwashers.
2. Remove top panel (Figure 1, Item 1) from frame (Figure 1, Item 9).

Disassembly

NOTE

The gasket is made of seven parts.

TOP PANEL ASSEMBLY REPAIR - (CONTINUED)

Insulation should be removed only if damaged and requires replacement.

1. Remove gasket (Figure 1, Item 5) and discard.
2. Mark location of insulation (Figure 1Items 6, 7, and 8) and remove as required.

Assembly

1. Cut new insulation (Figure 1, Item 6), (Figure 1, Item 7), and (Figure 1, Item 8) from bulk stock according to the RPSTL, Figures 18, 19, and/or 20.
2. Install seven parts of gasket (Figure 1, Item 5), cut according to WP 0095, Figure 4.

Installation

NOTE

The top panel is attached using twenty-eight or thirty-eight sets of hardware. Install the quantity of hardware required by the ASH under repair. Panels are interchangeable with all units.

1. Position top panel (Figure 1, Item 1) on top of frame (Figure 1, Item 9), correctly oriented and insulation side down.
2. Apply anti-seize compound to screws (Figure 1, Item 2).
3. Install flat washers (Figure 1, Item 4), lockwashers (Figure 1, Item 3) and screws (Figure 1, Item 2).
4. If installing a 38-hole top panel on a 28-hole frame, fill the unused holes in the panel with sealing compound to prevent corrosion.

TOP PANEL ASSEMBLY REPAIR - (CONTINUED)

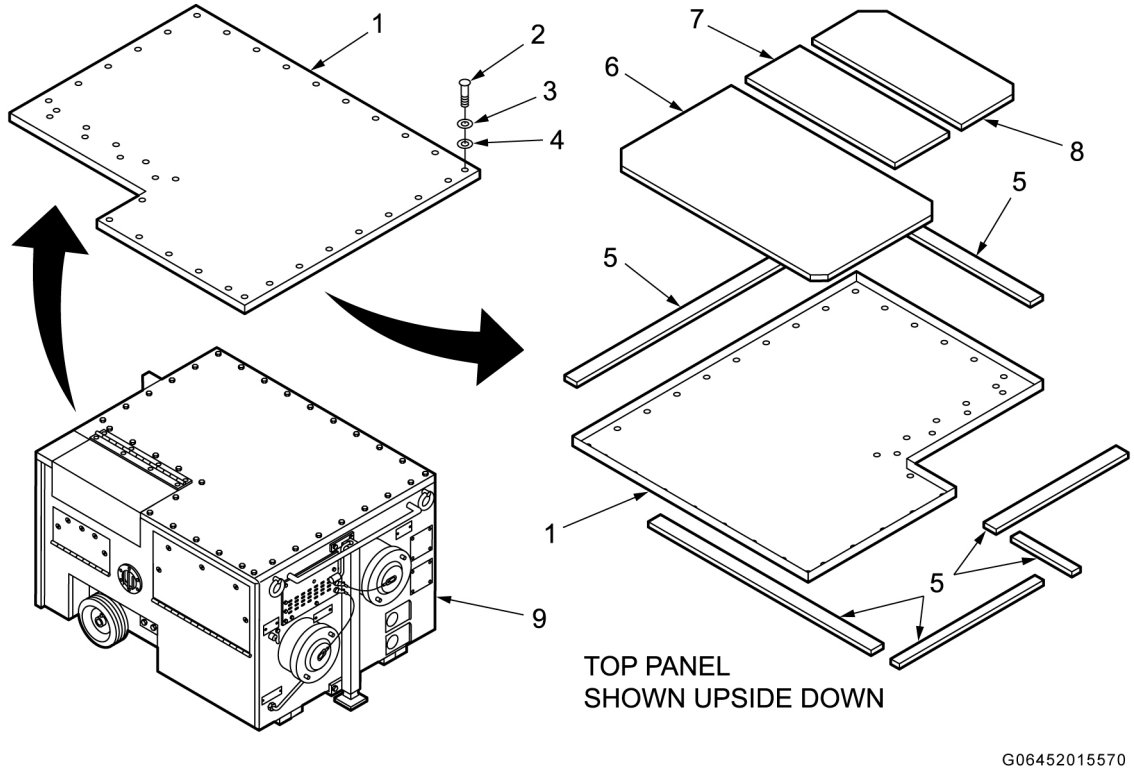


Figure 1. Top Panel Removal, Disassembly, Assembly, and Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

REAR PANEL ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Bit Set (Tool Set, SATS) (WP 0117, Item 1)
Drill (Tool Set, SATS) (WP 0117, Item 4)
Riveter, Blind, Hand (WP 0117, Item 11)
Riveter, Blind, Hand (WP 0117, Item 12)
Shop Equipment, Welding (WP 0117, Item 14)
Soft-faced Vise (Tool Set, SATS) (WP 0117, Item 16)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Adhesive (Item 1, WP 0116)
Anti-Seize Compound (WP 0116, Item 2)
Gaskets (WP 0095, Figure 5, Items 4, 24, 25, 26, 41, 42, and 43)
Insulation (WP 0088, Figure 1)
Insulation (WP 0088, Figure 4)
Insulation (WP 0095, Figure 5, Item 45)
Lockwashers (WP 0095, Figure 5, Items 2, 6, 9, and 34)
Rivet, Blind (WP 0095, Figure 5, Items 16, 18, 27, and 39)
Rivnut (WP 0095, Figure 5, Item 48)
Sealing Compound (WP 0116, Item 12)
Tape, Pressure Sensitive, Adhesive (WP 0116, Item 16)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1
TM 9-237
TM 43-0139

Equipment Condition
ASH disconnected from power source
Exhaust pipe and elbow removed , WP 0016
Top panel assembly removed, WP 0019

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

For fuel spills, refer to , Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

REAR PANEL ASSEMBLY REPAIR

Disassemble only to the level required to make repairs. Repair is limited to replacement of damaged parts and painting.

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

Inspection

1. Inspect rear panel for cracks. If found, notify maintainer to have cracks welded.
2. Paint rear panel in accordance with TM 40-0139.

Removal

1. Remove four machine bolts (Figure 1, Item 11) and remove exhaust protective cover (Figure 1, Item 12).
2. Remove four screws (Figure 1, Item 13), four lockwashers (Figure 1, Item 14), four flat washers (Figure 1, Item 15), and seal plate (Figure 1, Item 16). Remove sealant (Figure 1, Item 17). Discard lockwashers.
3. Remove ten screws (Figure 1, Item 2), ten lockwashers (Figure 1, Item 3), ten flat washers (Figure 1, Item 4) and isolator frame (Figure 1, Item 5). Discard lockwashers.
4. Open right rear door (Figure 1, Item 1) to access metal fuel-line tubing.
5. Disconnect fuel lines (Figure 1, Item 9) and (Figure 1, Item 10) from elbow (Figure 1, Item 8) and from straight connector (Figure 1, Item 7). Cover the ends of the fuel lines with adhesive tape to prevent any foreign matter from entering tubing. Remove dust cap (Figure 1, Item 6).
6. Remove sealant (Figure 1, Item 24) from sight-tube pipe (Figure 1, Item 26).
7. Remove thirty-three screws (Figure 1, Item 20), thirty-three lockwashers (Figure 1, Item 21), and thirty-three flat washers (Figure 1, Item 22). Discard lockwashers.
8. Remove rear panel (Figure 1, Item 19) from frame (Figure 1, Item 18) by gently pulling the panel over the rubber-like fuel-tank isolator (Figure 1, Item 23) that surrounds the fuel-filler neck.
9. Loosen setscrew and remove ring (Figure 1, Item 25) from sight tube (Figure 1, Item 26).

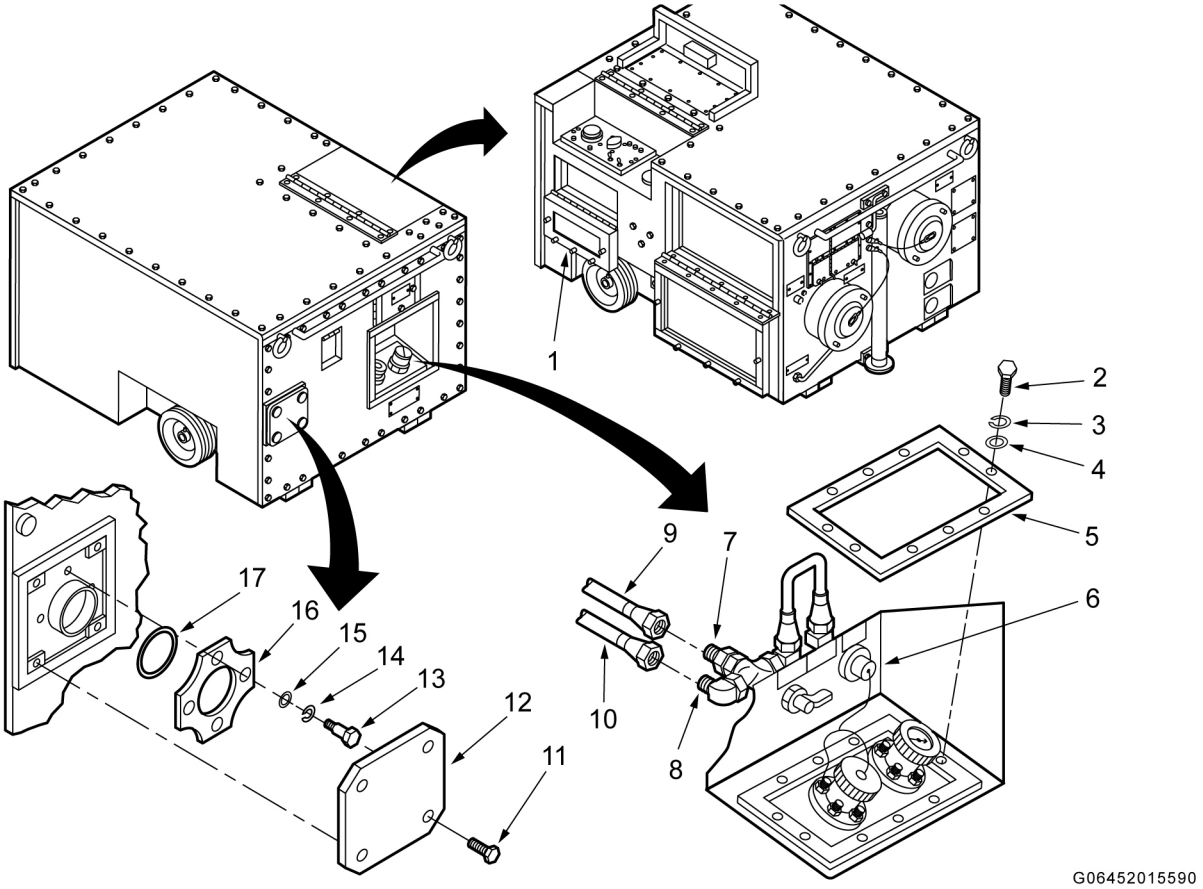


Figure 1. Rear Panel Assembly Removal (Sheet 1 of 2).

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

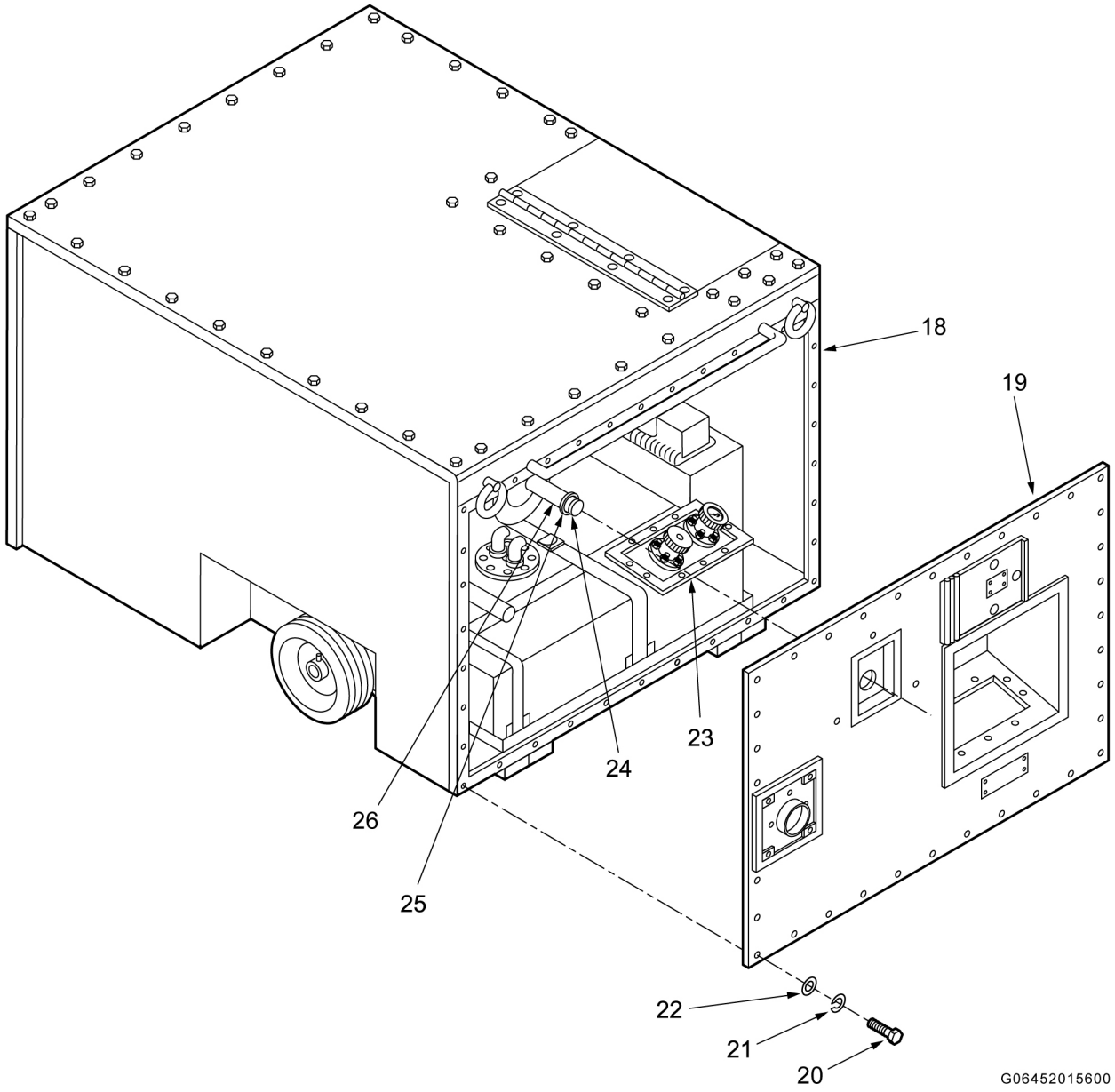


Figure 1. Rear Panel Assembly Removal (Sheet 2 of 2).

Disassembly

NOTE

Disassemble only to the level required to make repairs.

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

NOTE

Information plates are attached using two or four rivets each. Remove the quantity of rivets the ASH under repair requires.

1. Remove tubing, from elbow (Figure 2, Item 2) and from quick-disconnect coupling (Figure 2, Item 6) on the inner side of the rear panel.
2. Remove nut (Figure 2, Item 5) from quick-disconnect coupling (Figure 2, Item 6) and separate coupling from panel.
3. Position selector handle (Figure 2, Item 8) in “EXTERNAL TANK” position and remove screw (Figure 2, Item 7) and handle (Figure 2, Item 8).
4. Remove nut (Figure 2, Item 9) and separate selector-valve assembly (Figure 2, Item 10) from panel.
5. Place selector-valve assembly (Figure 2, Item 10) in a soft-faced vise and remove elbows (Figure 2, Item 11), and (\Figure 2, Item 2), and straight connector (Figure 2, Item 1). Remove selector valve from vise.
6. Drill out two rivets (Figure 2, Item 30) and remove sight glass cover (Figure 2, Item 31).
7. Drill out three rivets (Figure 2, Item 29) and remove exhaust storage door (Figure 2, Item 22). Drill out four rivets (Figure 2, Item 32) and remove information plate (Figure 2, Item 33).
8. Remove gaskets (Figure 2, Item 18), (Figure 2, Item 19), (Figure 2, Item 20), and (Figure 2, Item 21).
9. Remove three split washers (Figure 2, Item 28) and three turnlock fastener stud assemblies (Figure 2, Item 25).
10. Remove three retaining rings (Figure 2, Item 27) and three turnlock fastener eyelets (grommets) (Figure 2, Item 26).
11. Drill out six rivets (Figure 2, Item 14) and remove three turnlock receptacles (Figure 2, Item 13).
12. Drill out rivets (Figure 2, Item 17) and (Figure 2, Item 24) from each information plate (Figure 2, Item 15), (Figure 2, Item 16) and (Figure 2, Item 23) and remove plates.
13. Remove four gaskets (Figure 2, Item 36 x 2), (Figure 2, Item 37), and (Figure 2, Item 39). Discard gaskets.
14. Remove insulation (Figure 2, Item 35) and (Figure 2, Item 38), and two pieces of insulation (Figure 2, Item 34) as required.
15. Drill out 10 rivnuts (Figure 2, Item 40) and four rivnuts (Figure 2, Item 41).

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

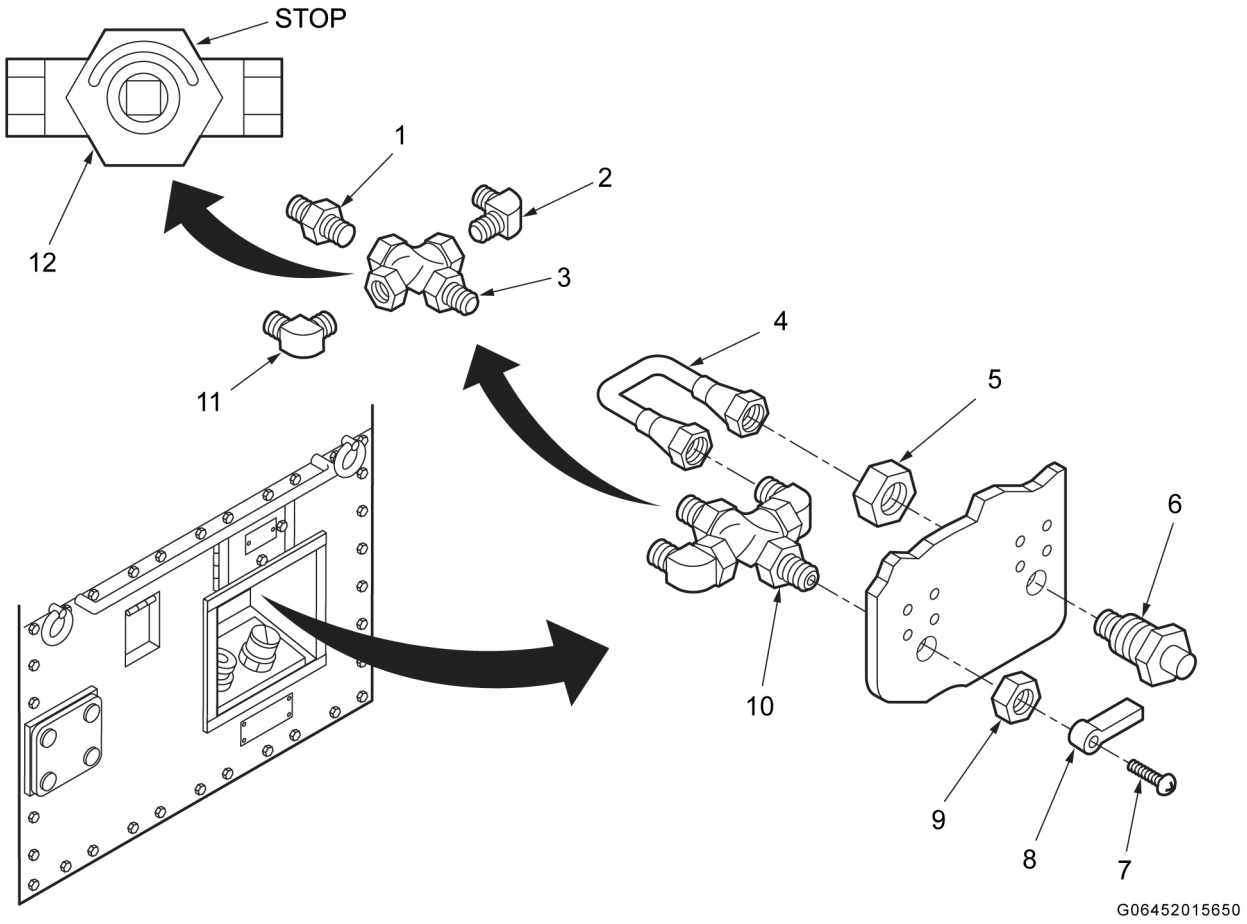


Figure 2. Rear Panel Disassembly (Sheet 1 of 4).

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

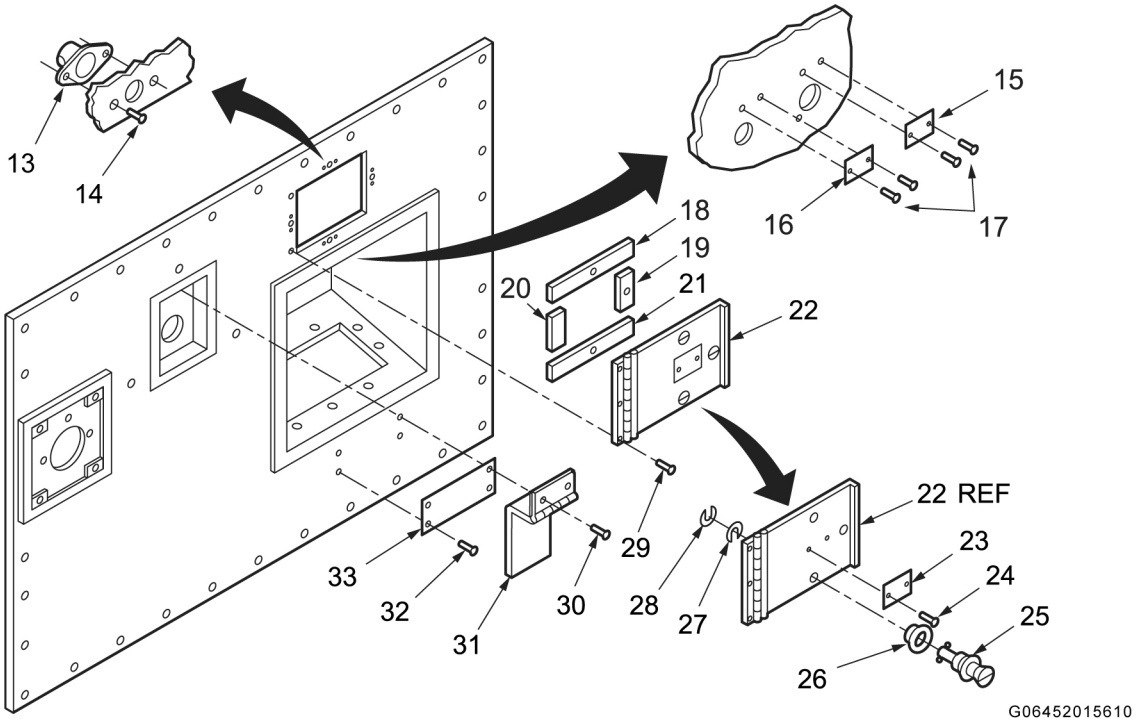


Figure 2. Rear Panel Disassembly (Sheet 2 of 4).

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

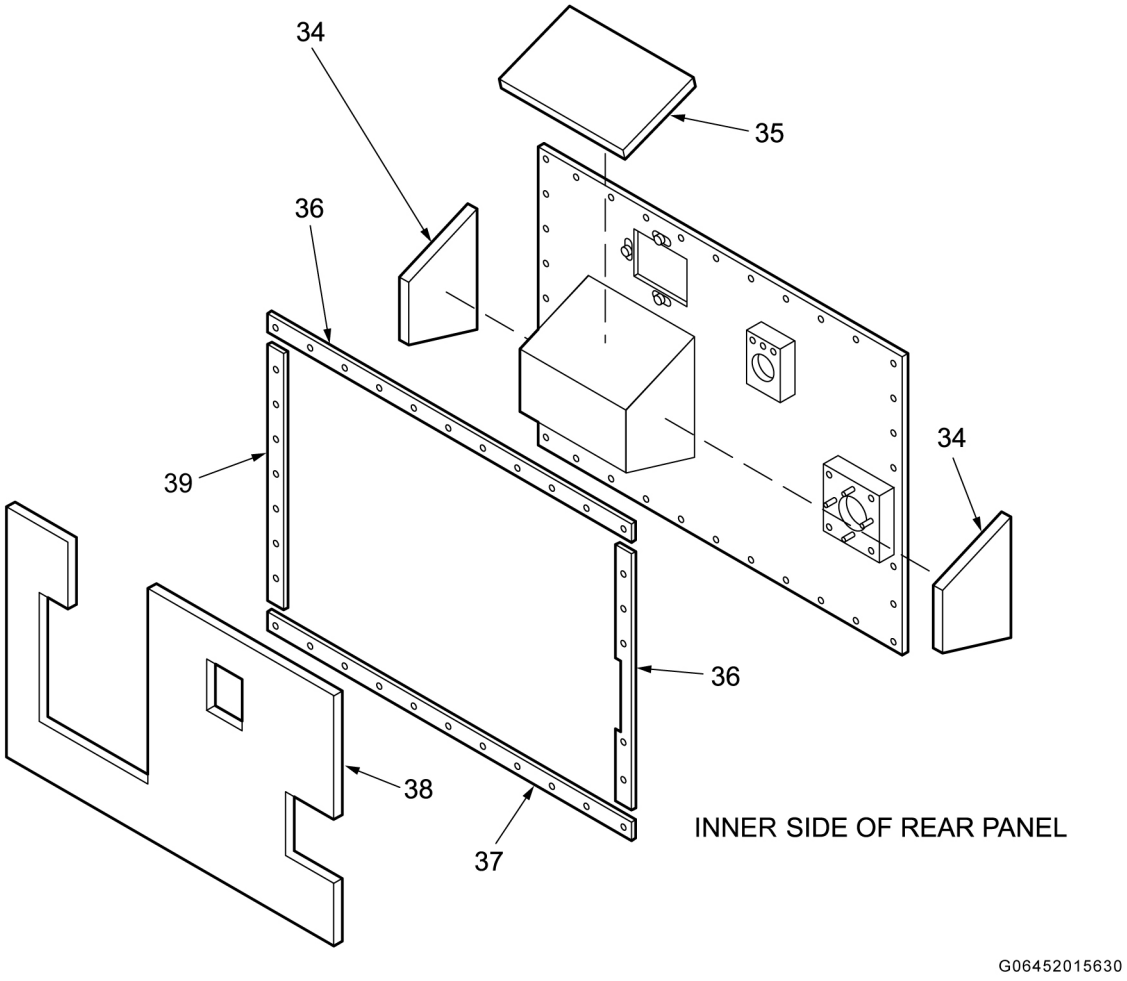


Figure 2. Rear Panel Disassembly (Sheet 3 of 4).

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

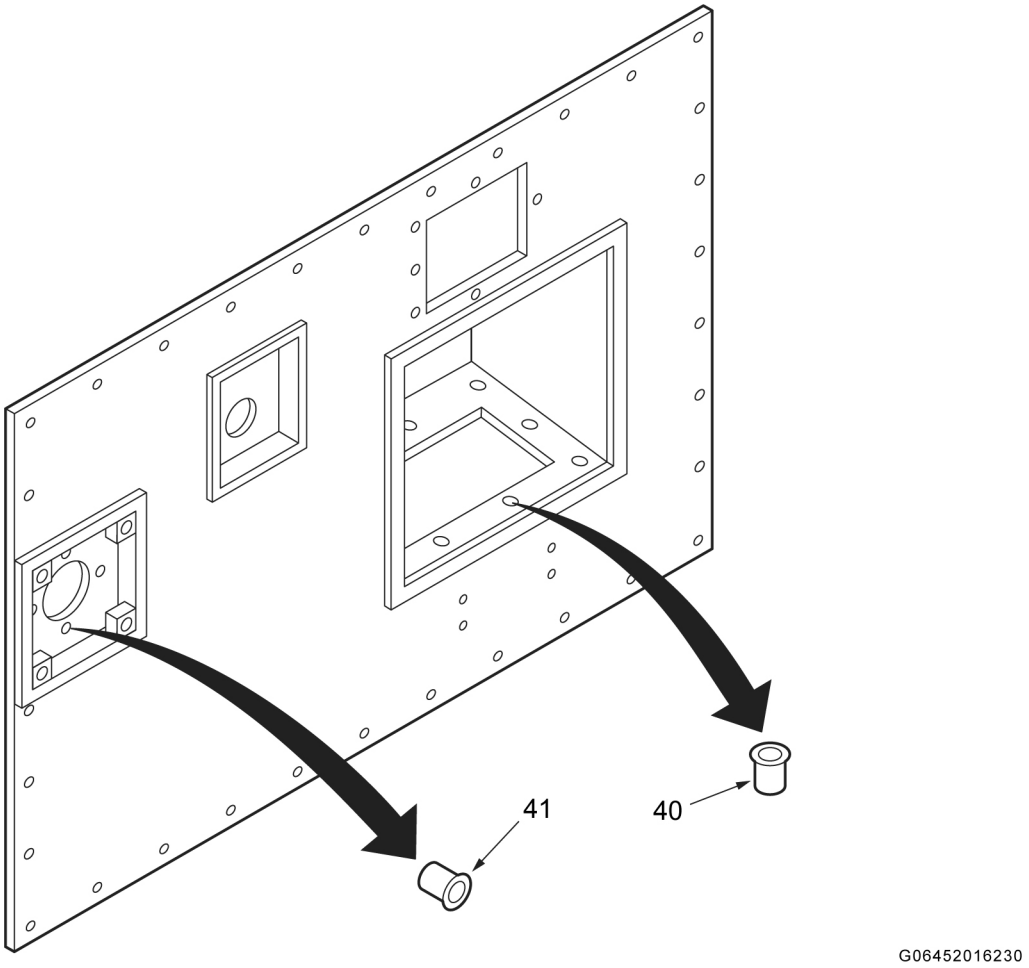


Figure 2. Rear Panel Disassembly (Sheet 4 of 4).

Assembly

NOTE

Information plates are attached using two or four rivets each. Install the quantity of rivets your ASH requires.

1. Install required rivnuts (Figure 3, Item 2) and (Figure 3, Item 3) of the appropriate size in rear panel (Figure 3, Item 1).
2. Prepare new insulation (Figure 4, Item 5) using old item as a template or using the instructions in WP 0097, Figure 16. Similarly, prepare one piece of insulation (Figure 4, Item 2) and two pieces of insulation (Figure 4, Item 1).
3. Install prepared insulation as in Figure 4 using contact adhesive R-373. Allow adhesive to set before proceeding.
4. Install self-adhesive gaskets (Figure 4, Item 4), (Figure 4, Item 7), and (Figure 4, Item 6), cutting each to fit.
5. Measure the notch for the remaining gasket (Figure 4, Item 3) against the exhaust housing or follow WP 0095, Figure 2. Install the remaining gasket.
6. Install information plates (Figure 5, Item 3), (Figure 5, Item 5), and (Figure 5, Item 11) and secure each with rivets (Figure 5, Item 4) and (Figure 5, Item 12).
7. Install three turnlock receptacles (Figure 5, Item 1) and secure with six rivets (Figure 5, Item 2).

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

8. Measure and install gaskets (Figure 5, Item 6), (Figure 5, Item 7), (Figure 5, Item 8), and (Figure 5, Item 9).
9. Install three turnlock fastener eyelets (grommets) (Figure 5, Item 14) and three retaining rings (Figure 5, Item 15).
10. Install three turnlock fastener stud assemblies (Figure 5, Item 13) and three split washers (Figure 5, Item 16).
11. Install information plate (Figure 5, Item 21), and secure with four rivets (Figure 5, Item 20).
12. Install exhaust storage door (Figure 5, Item 10) and secure with three rivets (Figure 5, Item 17).
13. Install site glass cover (Figure 5, Item 19) and secure with two rivets (Figure 5, Item 18).

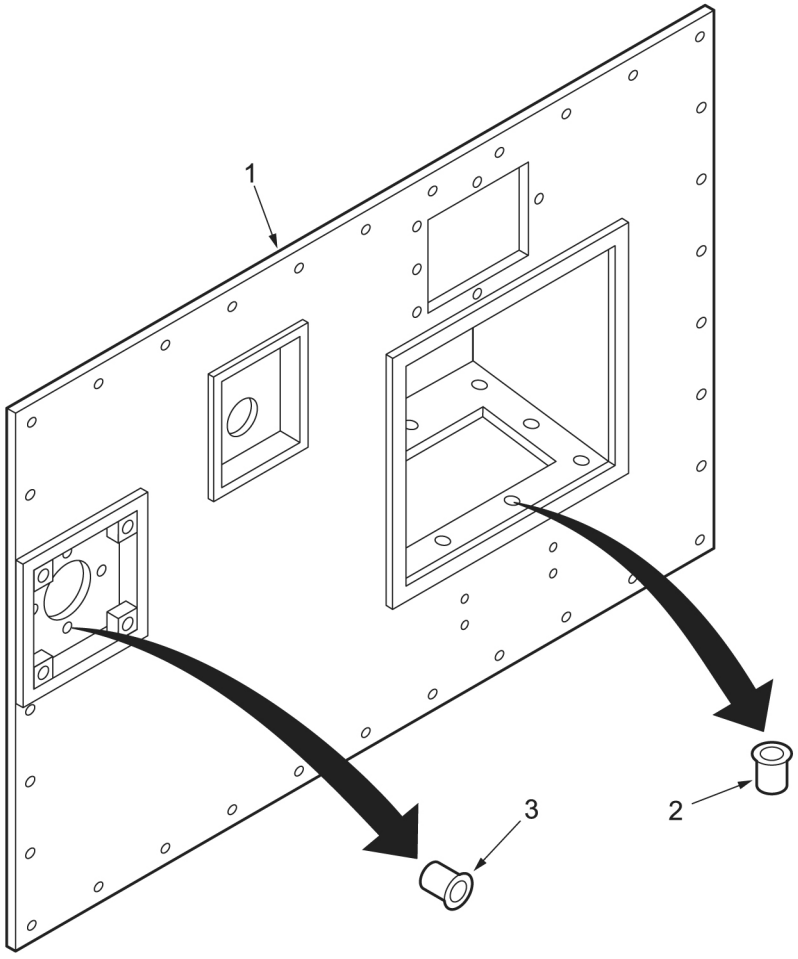


Figure 3. Rear Panel Assembly.

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

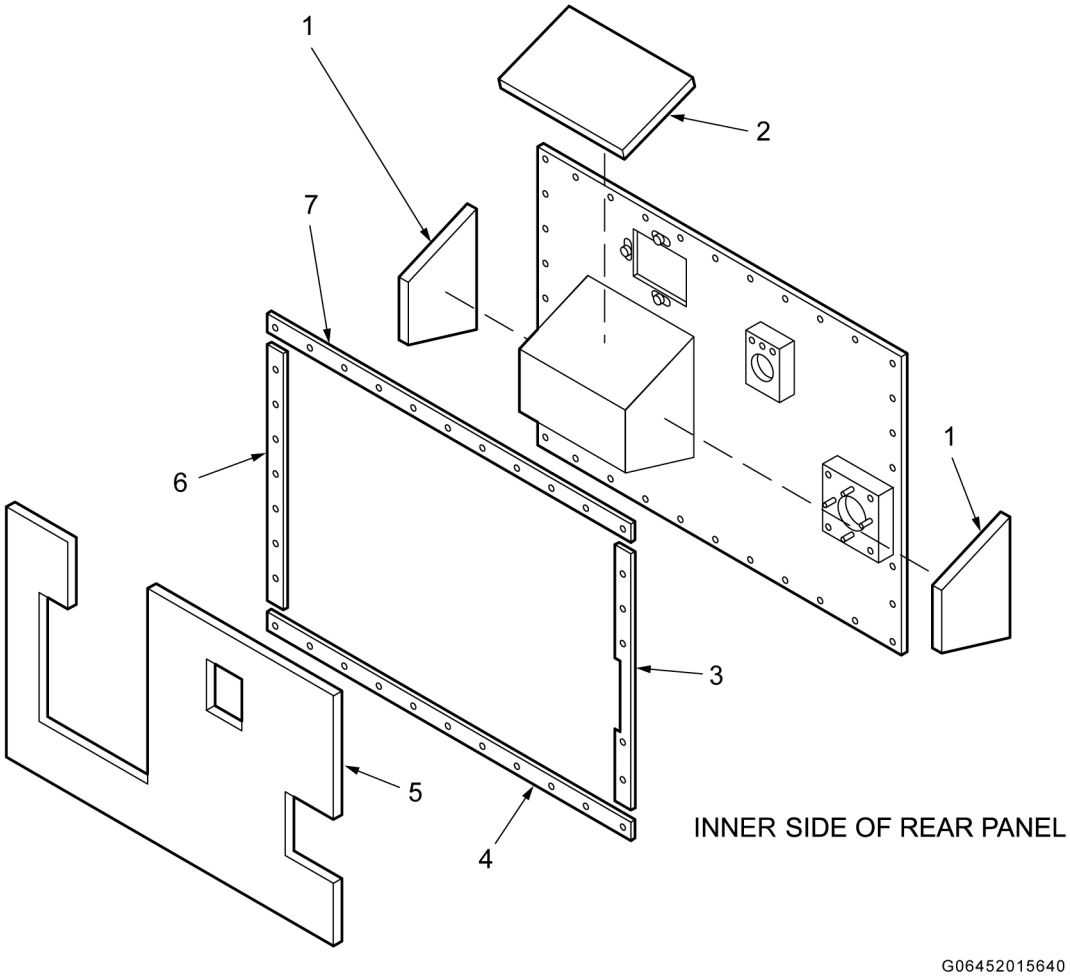


Figure 4. Rear Panel Assembly.

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

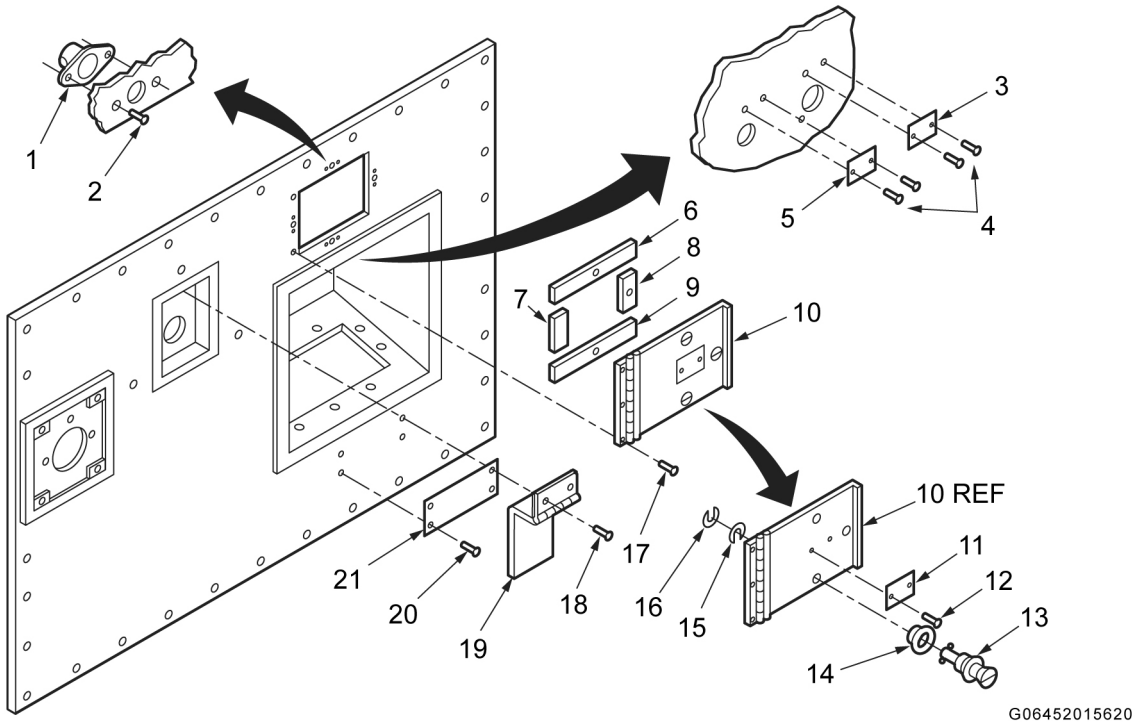


Figure 5. Rear Panel Assembly.

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

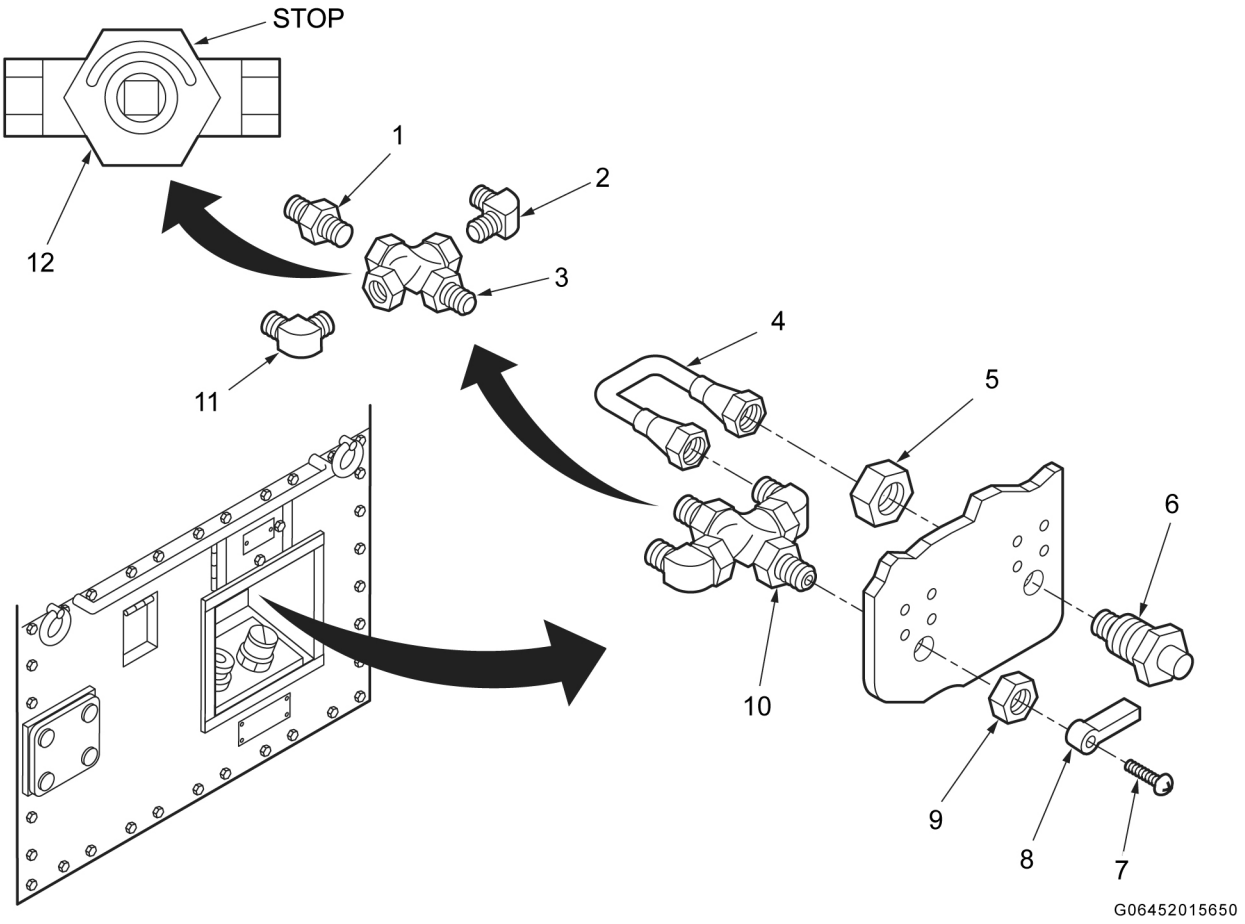


Figure 6. Rear Panel Assembly.

14. Hold selector valve (Figure 6, Item 12) in left hand with the half-moon-shaped handle stop on top and proceed as follows:
    a. Look in right side opening to ensure valve is open to that side.
    b. If it is not, use handle (Figure 6, Item 8) to turn valve stem 180° clockwise.
15. Remove handle, if necessary, and place selector valve (Figure 6, Item 3) in a soft-faced vise and install elbows (Figure 6, Item 11) and (Figure 6, Item 2) and straight connector (Figure 6, Item 1). Remove selector valve from vise.
16. Install selector-valve assembly (Figure 6, Item 10) with half-moon-shaped handle stop upwards in rear panel and secure with nut (Figure 6, Item 9).
17. Install handle (Figure 6, Item 8) onto selector-valve assembly and secure with screw (Figure 6, Item 7).
18. Install quick-disconnect coupling (Figure 6, Item 6) in rear panel and secure with nut (Figure 6, Item 5).
19. Install tubing (Figure 6, Item 4) on elbow (Figure 6, Item 2) and quick-disconnect coupling (Figure 6, Item 6).

Installation

1. Install ring (Figure 7, Item 6) on sight glass tube (Figure 7, Item 7), but do not tighten.
2. Install rear panel (Figure 7, Item 1) over isolator (Figure 7, Item 5). Gently pull isolator through rear panel so it rests on the outside of rear panel.
3. Apply anti-seize compound to screws (Figure 7, Item 2). Install thirty-three flat washers (Figure 7, Item 4), thirty-three lockwashers (Figure 7, Item 3), thirty-three screws (Figure 7, Item 2).
4. Apply a heavy bead of sealant around sight glass tube (Figure 7, Item 7) so it goes through the gap and provides a tight seal.

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

5. Position ring (Figure 7, Item 6) up against rear panel (Figure 7, Item 1), and tighten setscrew.
6. Remove adhesive tape from metal-tube fuel lines (Figure 7, Item 8) and (Figure 7, Item 9). Connect metal-tube fuel line (Figure 7, Item 8) to elbow (, Item 10) and metal-tube fuel line (Figure 7, Item 9) to straight connector (Figure 7, Item 11).
7. Install dust cap (Figure 7, Item 17) onto quick-disconnect coupling (Figure 7, Item 16).
8. Install isolator frame (Figure 7, Item 15), ten flat washers (Figure 7, Item 14), ten lockwashers (Figure 7, Item 13) and ten screws (Figure 7, Item 12).
9. Apply sealant around exhaust pipe (Figure 7, Item 24).
10. Install seal plate (Figure 7, Item 23), four flat washers (Figure 7, Item 22), four lockwashers (Figure 7, Item 21), and four machine bolts (Figure 7, Item 20).
11. Install cover (Figure 7, Item 19) and secure with four screws (Figure 7, Item 18).

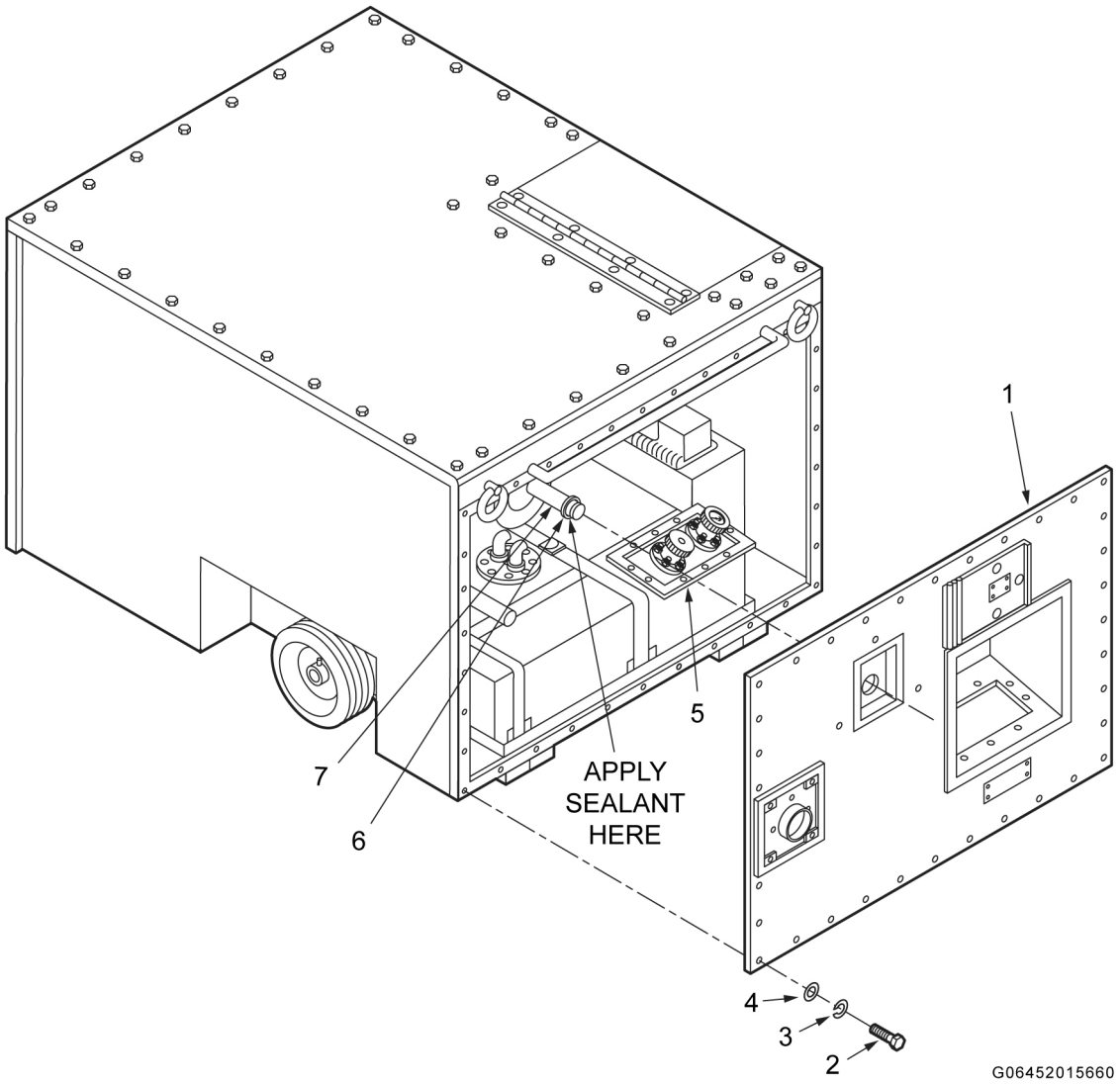


Figure 7. Rear Panel Installation (Sheet 1 of 2).

REAR PANEL ASSEMBLY REPAIR - (CONTINUED)

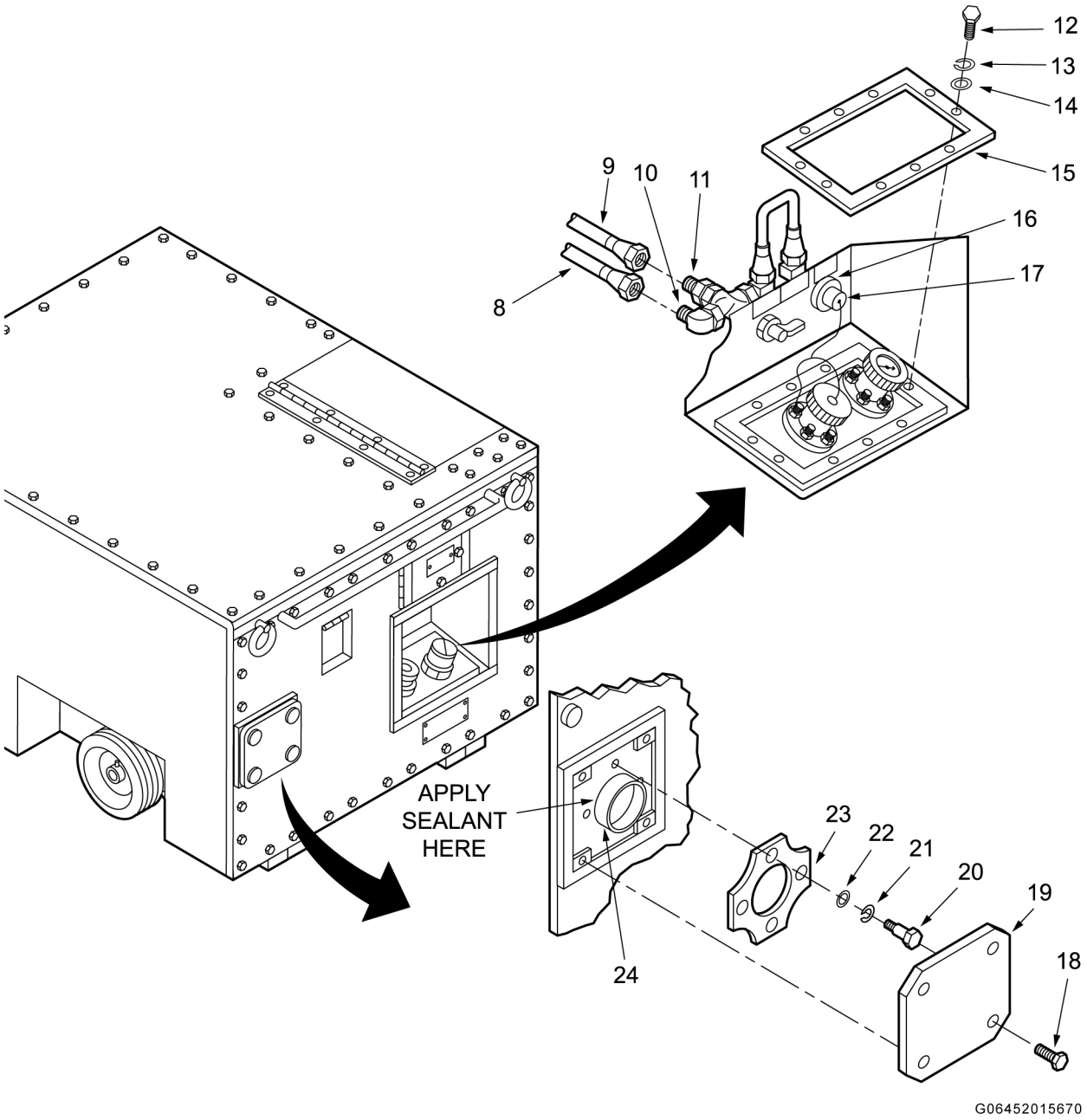


Figure 7. Rear Panel Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FRONT AND REAR SIDE DOOR ASSEMBLIES REPAIR

INITIAL SETUP:

Tools and Special Tools
Bit Set (Tool Set, SATS) (WP 0117, Item 1)
Drill (Tool Set, SATS) (WP 0117, Item 4)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Riveter, Blind, Hand (WP 0117, Item 12)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gaskets (WP 0084, Figure 2, Items 6, 7, 8, and 9)
Insulation (WP 0088, Figure 2)
Insulation (WP 0088, Figure 3)
Rivets (WP 0095, Figure 6, Item 3)
Rivets (WP 0095, Figure 7, Item 3)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

NOTE

The door assemblies are similar in construction. The differences are in size and the number of rivets used to secure the hinges. The rear panel is smaller and uses four rivets while the front door is larger and uses five rivets.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPAIR

Repair is limited to replacement of defective parts.

Front Side Door Removal

1. Open front side door.
2. Remove insulation (Figure 1, Item 4).
3. Remove nut (Figure 1, Item 2), lockwasher (Figure 1, Item 3), screw (Figure 1, Item 5) and ground wire (Figure 1, Item 6).
4. Drill out rivets (Figure 1, Item 7) connecting hinge (Figure 1, Item 1) to the bottom horizontal face of the door opening.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPAIR - (CONTINUED)

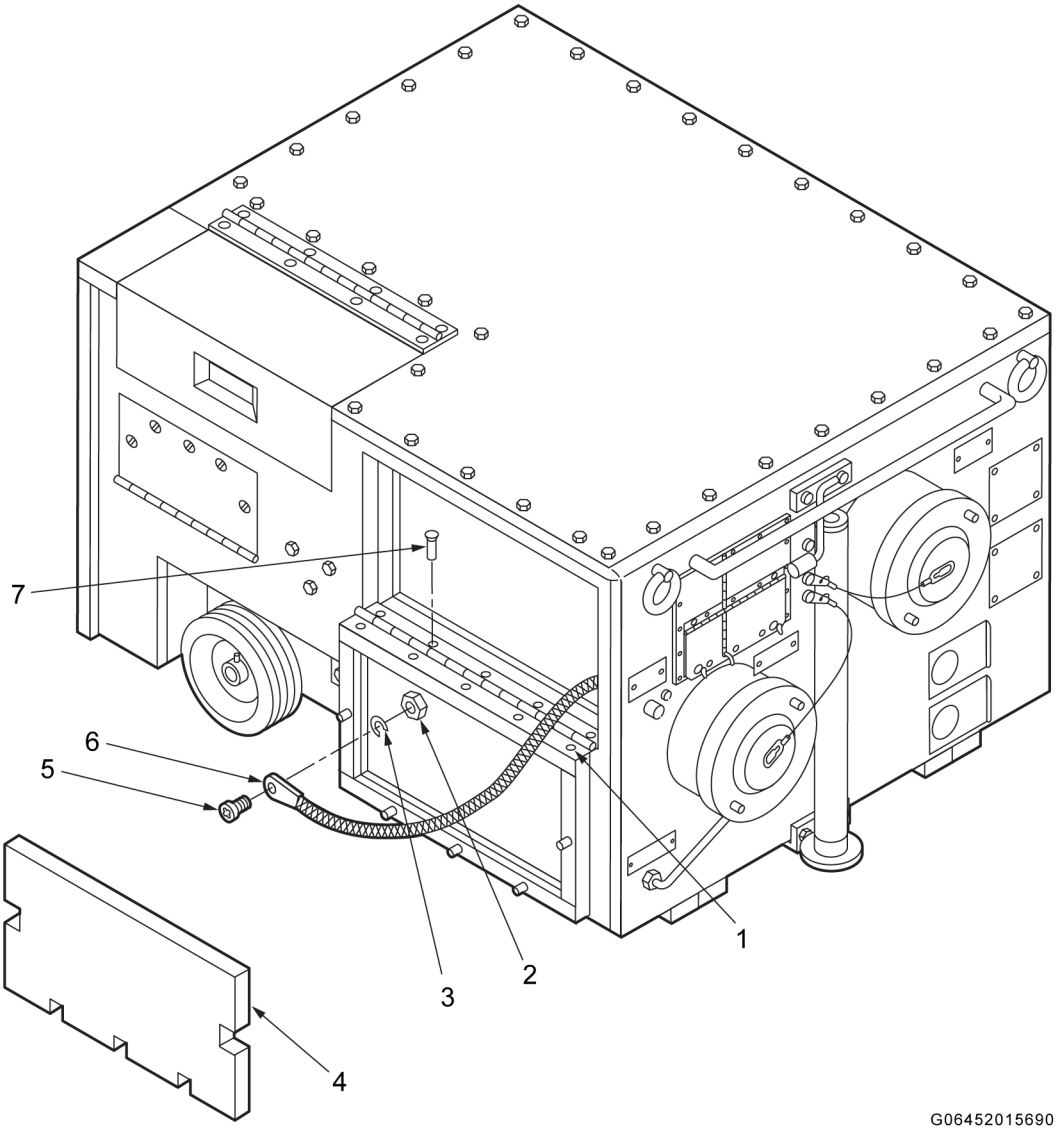


Figure 1. Front Side Door Removal/Installation.

Front Side Door Disassembly

1. Drill out rivets (Figure 2, Item 3) and remove hinge (Figure 2, Item 4) from door (Figure 2, Item 5).
2. Remove five split washers (Figure 2, Item 9) and five turnlock fastener stud assemblies (Figure 2, Item 6).
3. Remove five grommet-retainer rings (Figure 2, Item 8) and five turnlock fastener eyelets (grommets) (Figure 2, Item 7).
4. Remove two gaskets (Figure 2, Item 1) and two gaskets (Figure 2, Item 10) from the vertical faces of the door opening on the ASH (Figure 2, Item 2).

Front Side Door Assembly

1. Cut two gaskets (Figure 2, Item 1) 22-1/8 in long from 1-1/2-in-wide gasket material; install one of these gaskets to the vertical bottom face of the front door opening. Measure the other gasket and cut away material where needed to give access to door-closing hardware. Install the second gasket to the vertical face of the top of the door opening.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPAIR - (CONTINUED)

2. Cut two gaskets (Figure 2, Item 10) 11-3/4 in long from 1-1/2-in-wide gasket material. Measure these gaskets and cut away material where needed to give access to door-closing hardware. Install these gaskets to the outer vertical side faces of the front door opening.
3. Install five turnlock fastener eyelets (grommets) (Figure 2, Item 7) in the outer face of the door and five grommet-retainer rings (Figure 2, Item 8) on the inner face of the door.
4. Install five turnlock fastener stud assemblies (Figure 2, Item 6) through the outer to the inner face of the door; secure them with five split washers (Figure 2, Item 9) against the inner face of the door.
5. Install hinge (Figure 2, Item 4) with rivets (Figure 2, Item 3) on door (Figure 2, Item 5).

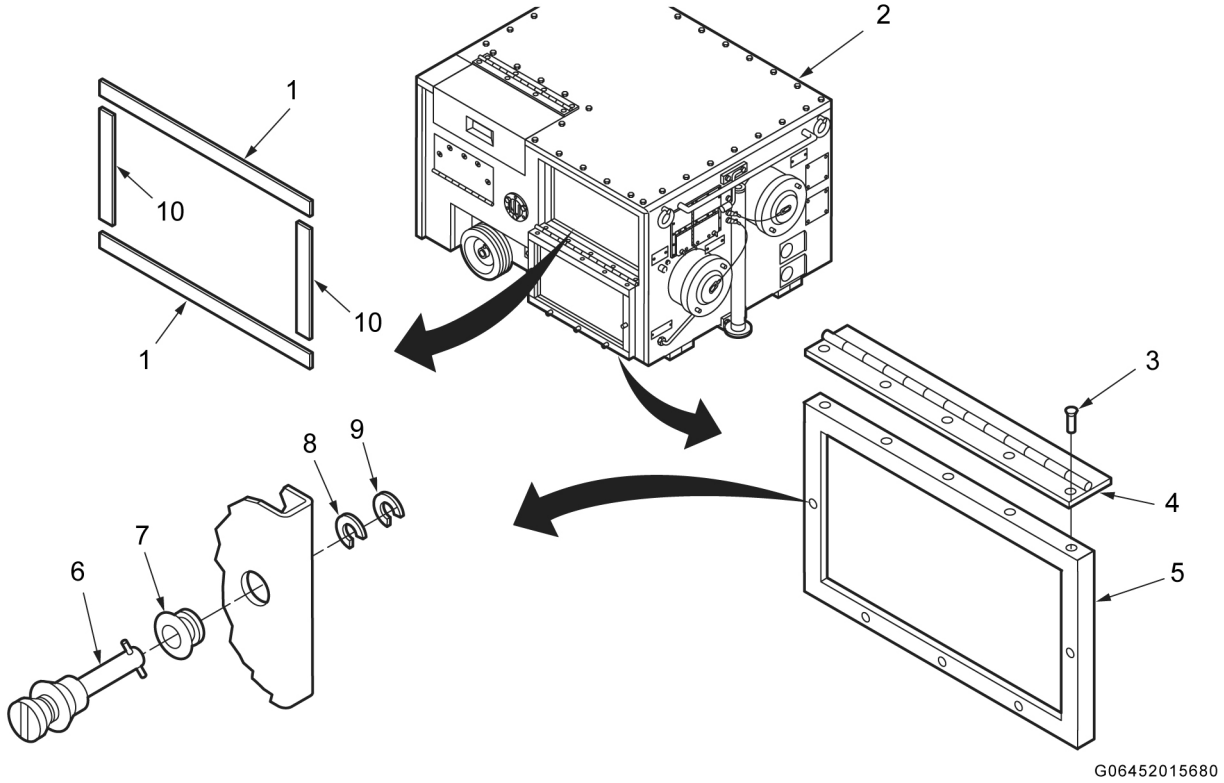


Figure 2. Front Side Door Disassembly/Assembly.

Front Side Door Installation

1. Install hinge (Figure 1, Item 1) with rivets (Figure 1, Item 7) to the bottom horizontal face of the door opening.
2. Install ground wire (Figure 1, Item 6) with screw (Figure 1, Item 5), lockwasher (Figure 1, Item 3), and nut (Figure 1, Item 2).
3. Cut insulation (Figure 1, Item 4) 13-11/16 in by 21-13/16 in. Notch the insulation by using the original insulation as a template, or by following WP 0088, Figure 2, or measure and notch the new insulation to provide clearance for the door-closing hardware. Install insulation against the inner face of the door.
4. Close door.

Rear Side Door Removal

1. Open rear side door and remove insulation (Figure 3, Item 8) from door.
2. Remove nut (Figure 3, Item 3), lockwasher (Figure 3, Item 4), screw (Figure 3, Item 7), and ground wire (Figure 3, Item 5) from rear door.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPAIR - (CONTINUED)

3. Drill out rivets (Figure 3, Item 1) connecting hinge (Figure 3, Item 2) to the bottom vertical face of the door opening.

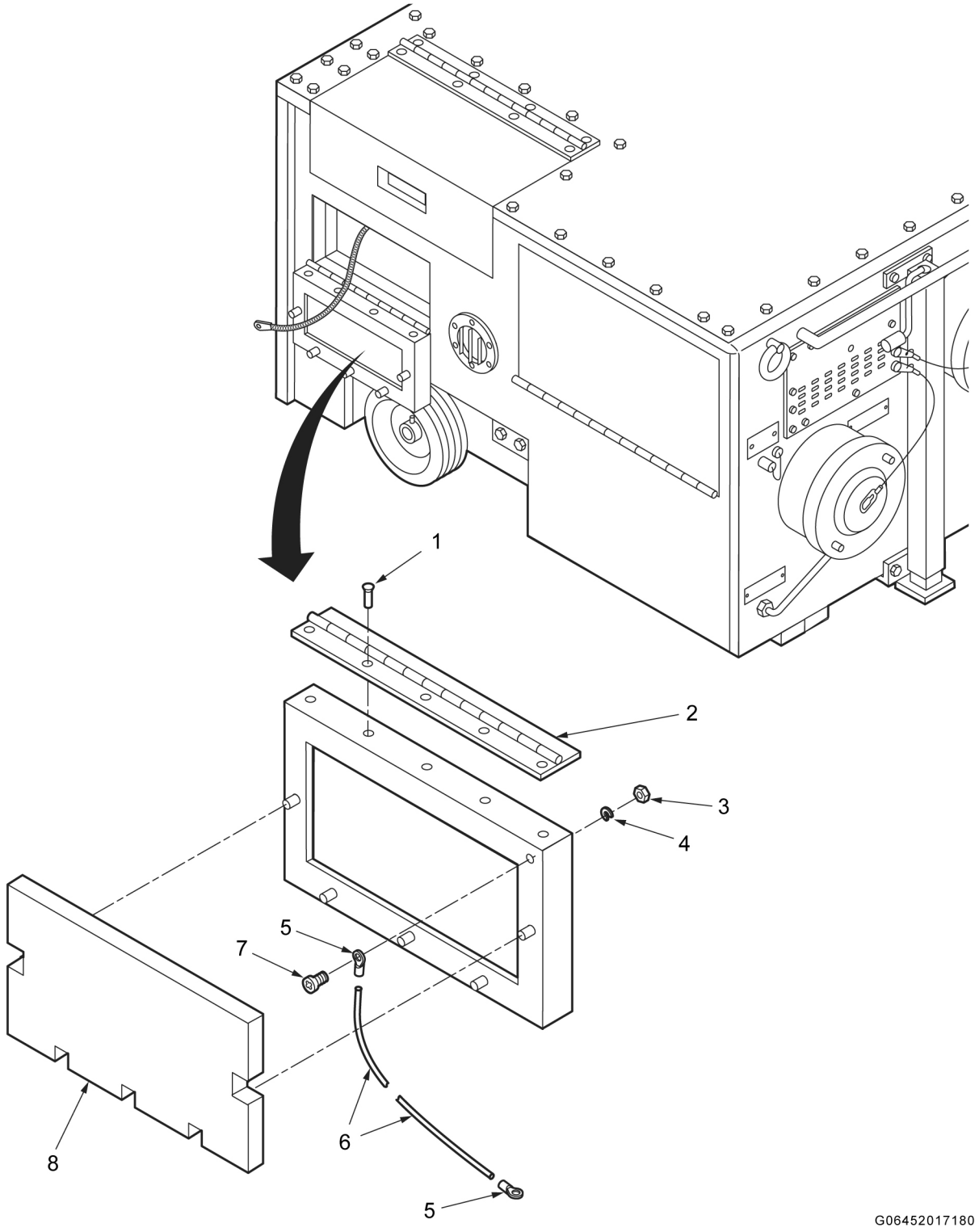


Figure 3. Rear Side Door Removal/Installation.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPAIR - (CONTINUED)

Rear Side Door Disassembly

1. Drill out rivets (Figure 4, Item 3) and remove hinge (Figure 4, Item 4) from door (Figure 4, Item 5).
2. Remove five split washers (Figure 4, Item 10) and five turnlock fastener stud assemblies (Figure 4, Item 7).
3. Remove five grommet-retainer rings (Figure 4, Item 9) and five turnlock fastener eyelets (grommets) (Figure 4, Item 8).
4. Remove two gaskets (Figure 4, Item 1) and two gaskets (Figure 4, Item 11) from the outer vertical faces of the door opening on the ASH (Figure 4, Item 2).

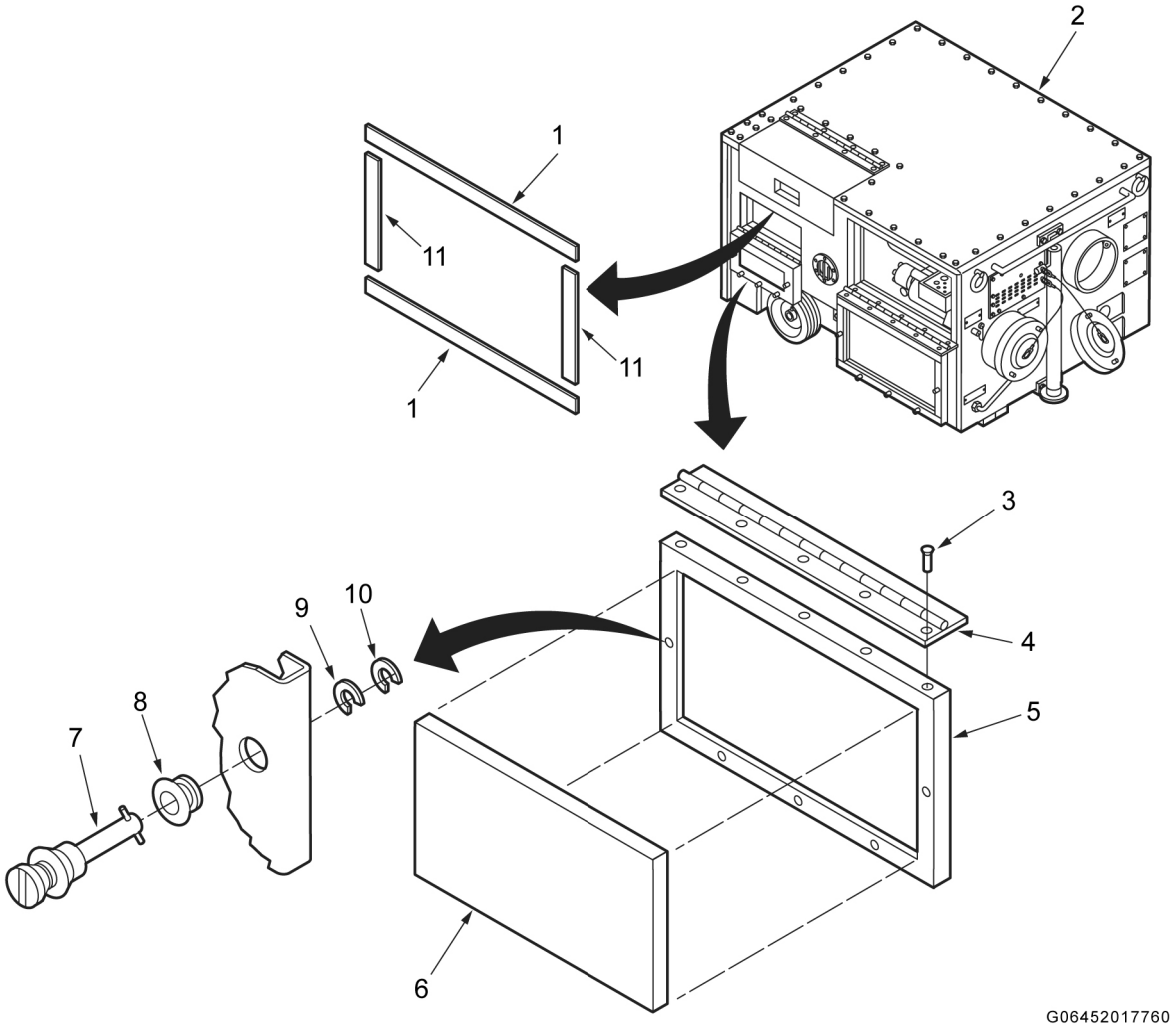


Figure 4. Rear Side Door Disassembly/Assembly.

Rear Side Door Assembly

1. Cut two gaskets (Figure 4, Item 1) 16-1/8 in long from 1-in-wide gasket material; install one of these gaskets to the vertical bottom face of the rear door opening. Measure the other gasket and cut away material where needed to give access to door-closing hardware. Install the second gasket to the outer top face of the door opening.

FRONT AND REAR SIDE DOOR ASSEMBLIES REPAIR - (CONTINUED)

2. Cut two gaskets (Figure 4, Item 11) 7-5/8 in long from 1-1/2 in-wide gasket material. Measure these gaskets and cut away material where needed to give access to door-closing hardware. Install these gaskets to the outer vertical side faces of the rear door opening.
3. Install five turnlock fastener eyelets (grommets) (Figure 4, Item 8) in the outer face of the door and five grommet-retainer rings (Figure 4, Item 9) on the inner face of the door.
4. Install five turnlock fastener stud assemblies (Figure 4, Item 7) through the outer to the inner face of the door; secure them with five split washers (Figure 4, Item 10) against the inner face of the door.
5. Install hinge (Figure 4, Item 4) with rivets (Figure 4, Item 3) on door (Figure 4, Item 5).

Rear Side Door Installation

1. Install hinge (Figure 3, Item 2) with rivets (Figure 3, Item 1) to the bottom horizontal face of the door frame.
2. Install ground wire (Figure 3, Item 5) with screw (Figure 3, Item 7), lockwasher (Figure 3, Item 4), and nut (Figure 3, Item 3).
3. Cut insulation (Figure 3, Item 8) 9-1/2 in by 15-13/16 in. Notch the insulation by using the original insulation as a template, or by following , Figure 3or measure and notch the new insulation to provide clearance for the door-closing hardware. Install insulation inside door frame.
4. Close door.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

DUCT COVER ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Lockwasher (WP 0095, Figure 9, Item 2)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance.

DUCT COVER ASSEMBLY REPAIR

Repair of duct cover assembly is limited to replacement of damaged parts. Procedures for both covers are the same.

Inspection

1. Inspect cover assemblies for dents, fraying, or cuts.
2. Dents may be repaired with a hammer.
3. If cable assembly (Figure 1, Item 1) is damaged, fabricate a new cable assembly (, Figure 1).

Removal

1. Loosen two screws (Figure 1, Item 9).
2. Rotate duct cover (Figure 1, Item 6) until the screw heads line up with the large ends of the cover's keyhole-shaped cutouts. Remove cover from duct.
3. Remove screw (Figure 1, Item 4), lockwasher (Figure 1, Item 3), flat washer (Figure 1, Item 2), and cable (Figure 1, Item 1). Discard lockwasher.

Repair

1. Remove locknut (Figure 1, Item 8), flat washer (Figure 1, Item 7), screw (Figure 1, Item 5), and cable assembly (Figure 1, Item 1) from cover (Figure 1, Item 6).
2. Attach cable assembly (Figure 1, Item 1) to cover (Figure 1, Item 6) using screw (Figure 1, Item 5), flat washer (Figure 1, Item 7) and locknut (Figure 1, Item 8).

Installation

1. Apply anti-seize compound to screw (Figure 1, Item 4). Install cable (Figure 1, Item 1), screw (Figure 1, Item 4), flat washer (Figure 1, Item 3), and lockwasher (Figure 1, Item 2).
2. Align duct cover (Figure 1, Item 6) so two screws (Figure 1, Item 9) protrude through the large ends of the cover's keyhole-shaped cutouts.
3. Rotate the duct cover (Figure 1, Item 6) so that the screw shafts are in the narrow portion of the keyhole-shaped cutouts, and then tighten the two screws (Figure 1, Item 9).

DUCT COVER ASSEMBLY REPAIR - (CONTINUED)

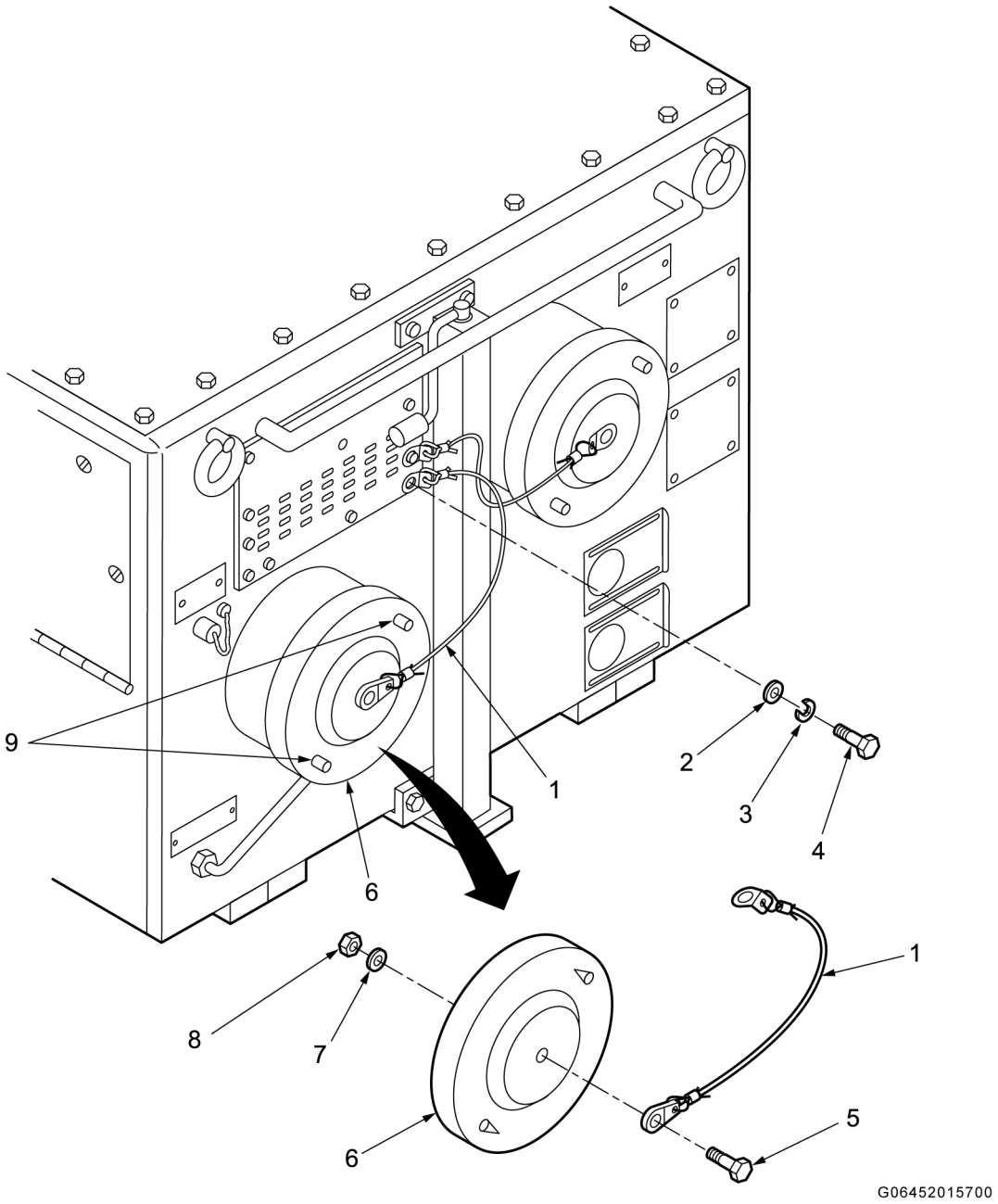


Figure 1. Duct Cover Inspection, Removal, Repair, and Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CONTROL BOX PANEL ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket (WP 0096, Figure 11, Item 2)
Lockwasher (WP 0096, Figure 11, Item 4)
Lockwasher (WP 0096, Figure 12, Items 2 and 8)
O-ring (WP 0096, Figure 11, Items 6 and 8)
Tags, Marker (WP 0116, Item 15)
Terminal Splice (WP 0118, Item 45)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

CONTROL BOX PANEL ASSEMBLY REPAIR

Repair is limited to replacement of damaged parts. Remove components only to the level required to make repairs.

Inspect all parts for wear, cracks, corrosion, bent or broken terminals, and/or broken or cracked glass. Inspect all hardware for stripped or damaged threads.

Mode Switch and Hourmeter Disassembly

1. Open control box cover (Figure 1, Item 6) and control panel lid (Figure 1, Item 5).
2. Remove screw (Figure 1, Item 7), knob (Figure 1, Item 8) and pin (Figure 1, Item 9).
3. Tag and disconnect sixteen wires (Figure 1, Item 14) from MODE switch (Figure 1, Item 16) by removing thirteen screws (Figure 1, Item 15).

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

4. Remove four screws (Figure 1, Item 3), four O-rings (Figure 1, Item 4) and MODE switch (Figure 1, Item 16).
5. Remove nut (Figure 1, Item 13) and sleeve (Figure 1, Item 12).
6. Tag and disconnect hourmeter wires (Figure 1, Item 11) and (Figure 1, Item 10).
7. Remove three self-locking nuts (Figure 1, Item 17), three flat washers (Figure 1, Item 18), ground wire (Figure 1, Item 19), three screws (Figure 1, Item 2), hourmeter (Figure 1, Item 1) and gasket (Figure 1, Item 20).
8. If necessary, retain gasket for use as a template for manufacturing a replacement IAW (WP 0096, Figure 11, Item 2). Otherwise, discard gasket.

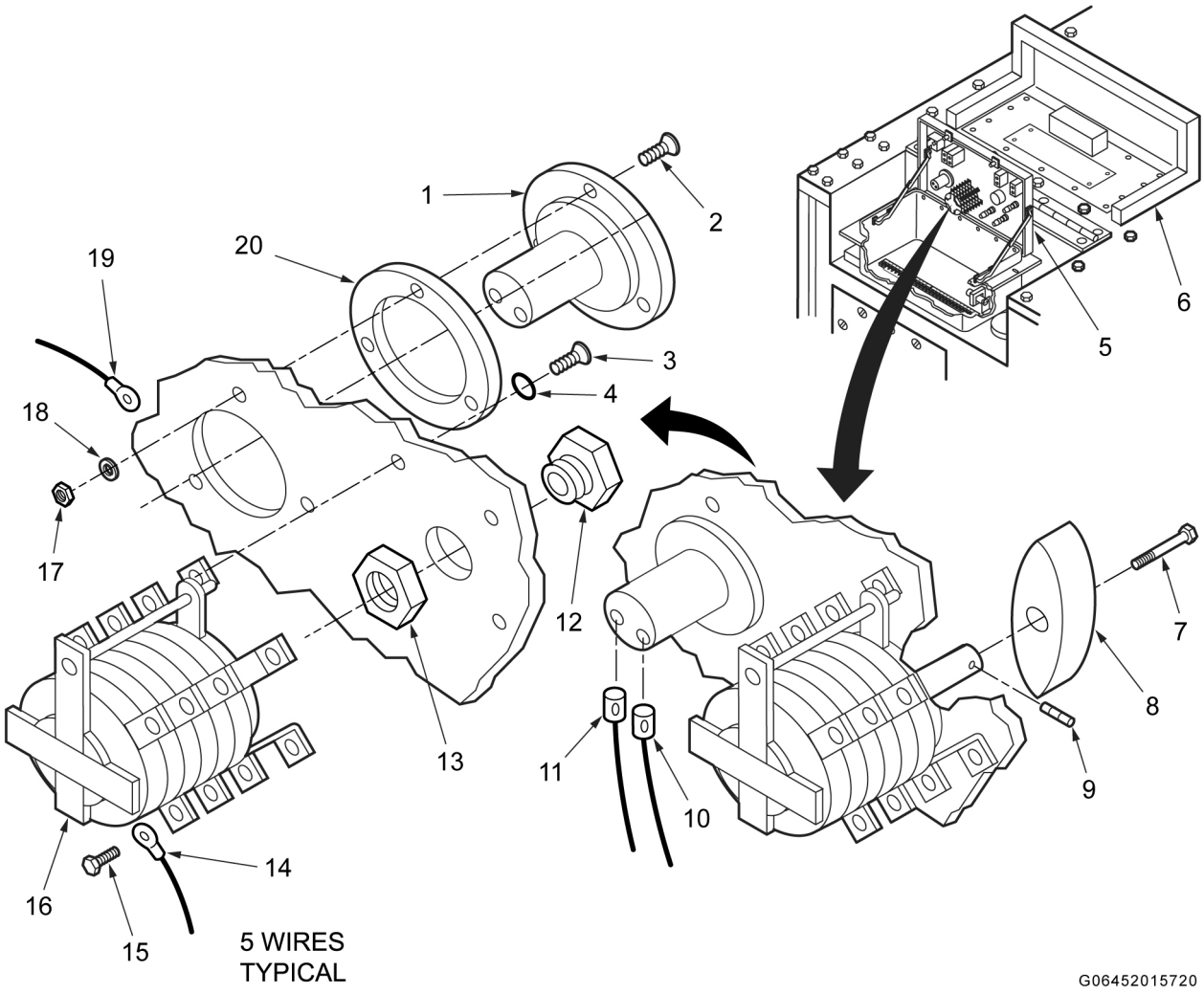


Figure 1. Control Box Panel: Mode Switch and Hourmeter Disassembly.

Thermostat and Power Circuit Breakers Disassembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

1. Tag and disconnect wires (Figure 2, Item 1) and (Figure 2, Item 11).
2. Remove two nuts (Figure 2, Item 13), two lockwashers (Figure 2, Item 12), two screws (Figure 2, Item 5), two O-rings (Figure 2, Item 4), POWER circuit breaker (Figure 2, Item 2) and O-ring (Figure 2, Item 3). Discard O-ring and lockwashers.
3. Tag and disconnect wires (Figure 2, Item 9) and (Figure 2, Item 10).
4. Remove nut (Figure 2, Item 6), THERMOSTAT circuit breaker (Figure 2, Item 8) and O-ring (Figure 2, Item 7). Discard O-ring.

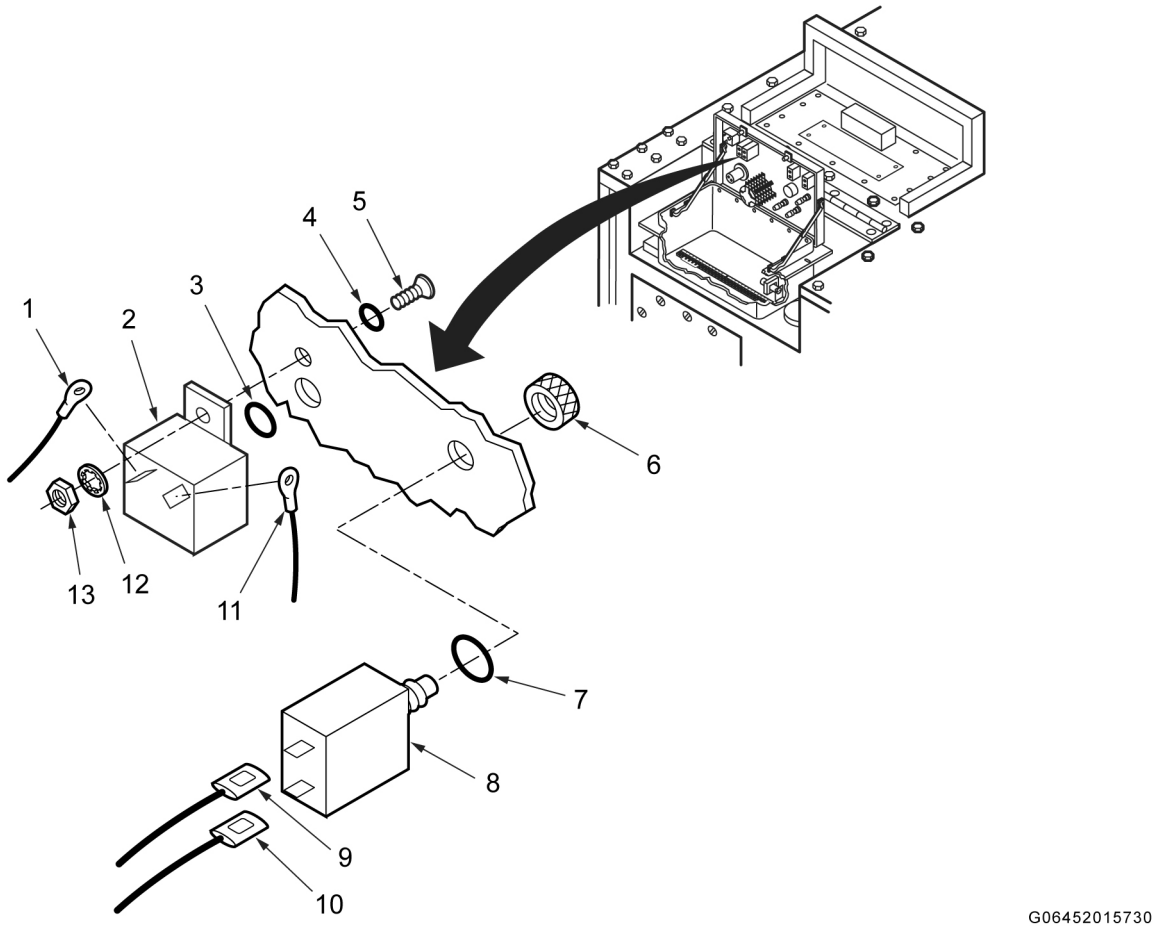


Figure 2. Control Box Panel: Thermostat and Power Circuit Breakers Disassembly.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

Purge and Flame Reset Switches Disassembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

NOTE

Both switches are the same.

1. Remove extension (Figure 3, Item 4).
2. Tag and disconnect wires (Figure 3, Item 8) and (Figure 3, Item 9).
3. Remove nut (Figure 3, Item 3), lockwasher (Figure 3, Item 2), O-ring (Figure 3, Item 1), switch (Figure 3, Item 7), keyed washer (Figure 3, Item 5) and nut (Figure 3, Item 6). Discard O-ring.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

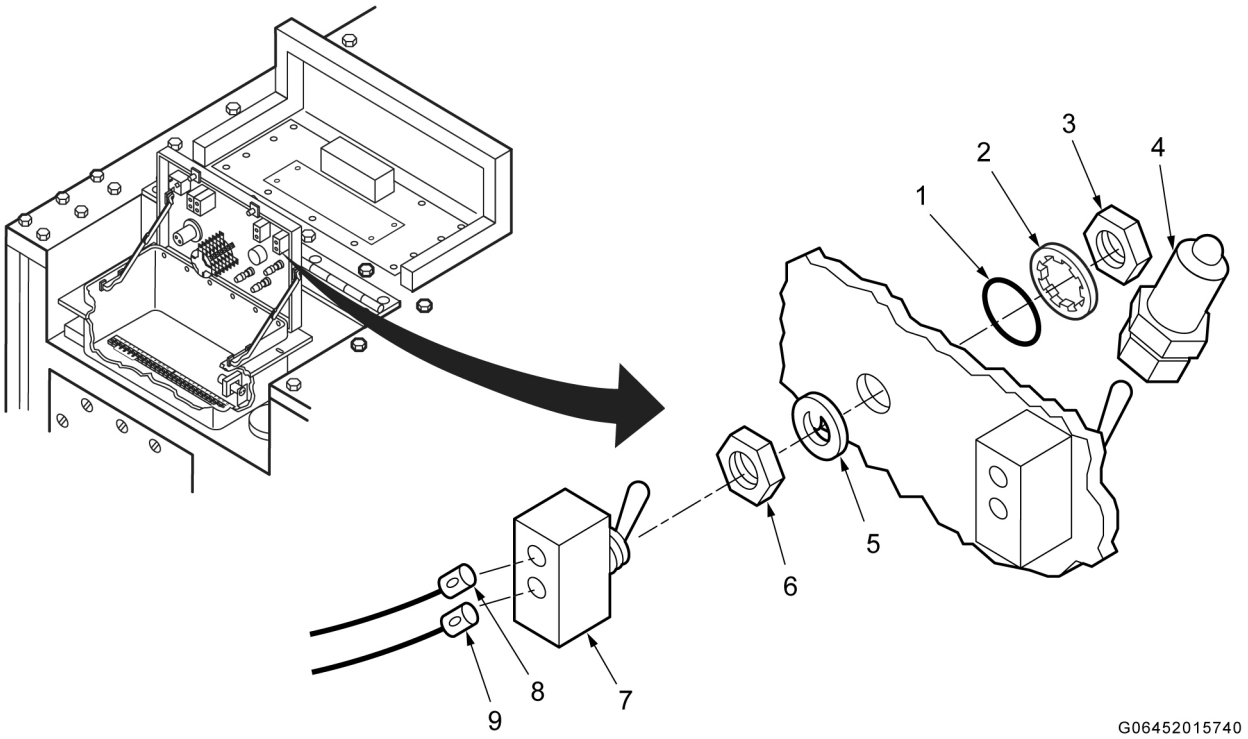


Figure 3. Control Box Panel: Purge and Flame Reset Switches Disassembly.

Flameout, High Temp, and Power Lights Disassembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

NOTE

All three lights are the same. Only the cap colors differ. Power light is green; others are red.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

1. Tag and disconnect two wires (Figure 4, Item 1).
2. Remove nut (Figure 4, Item 7), lockwasher (Figure 4, Item 6), gasket (Figure 4, Item 5) and light (Figure 4, Item 4).
3. Remove cap (Figure 4, Item 2) and bulb (Figure 4, Item 3).

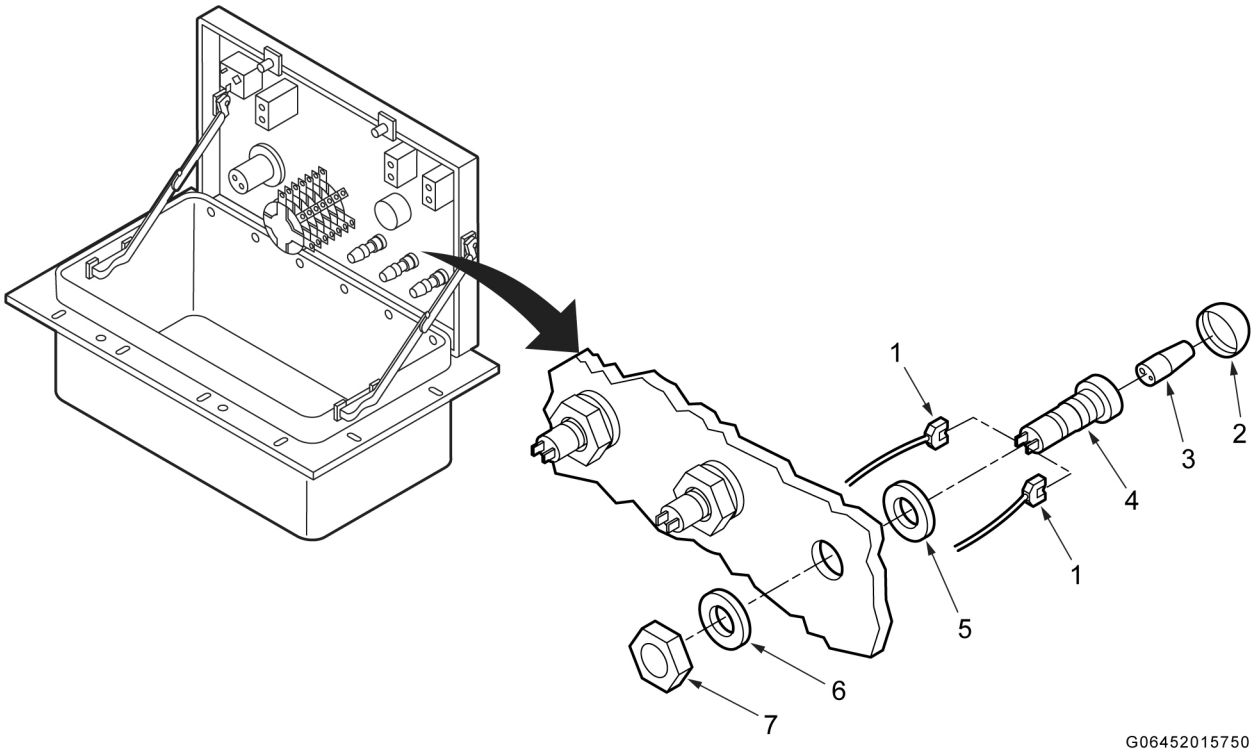


Figure 4. Control Box Panel: Flameout, High Temp, and Power Lights Disassembly.

Transformer/Terminal Boards Disassembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

1. Tag and disconnect two wires (Figure 5, Item 1).

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

2. Tag and separate black wire (Figure 5, Item 5) and white wire (Figure 5, Item 3) at splices (Figure 5, Item 6). Discard splices.
3. Remove two nuts (Figure 5, Item 8), two lockwashers (Figure 5, Item 7), two screws (Figure 5, Item 4) and transformer (Figure 5, Item 2). Discard lockwashers.
4. Open rear side door (Figure 5, Item 24), tag and disconnect wires on top and bottom of Terminal Board 1 (TB1) (Figure 5, Item 15) and TB3 (Figure 5, Item 11) and remove jumper (Figure 5, Item 14) and two terminals (Figure 5, Item 12).
5. Remove four nuts (Figure 5, Item 9), four lockwashers (Figure 5, Item 10), four screws (Figure 5, Item 13), TB1 (Figure 5, Item 15), TB3 (Figure 5, Item 11), and the two terminal marking strips (Figure 5, Item 16). Discard lockwashers.
6. Remove nut (Figure 5, Item 17), lockwasher (Figure 5, Item 18), tag and disconnect seven wires (Figure 5, Item 19). Discard lockwasher.
7. Remove nut (Figure 5, Item 20), two lockwashers (Figure 5, Item 21), screw (Figure 5, Item 23) and ground wire (Figure 5, Item 22). Tag wire. Discard lockwashers.

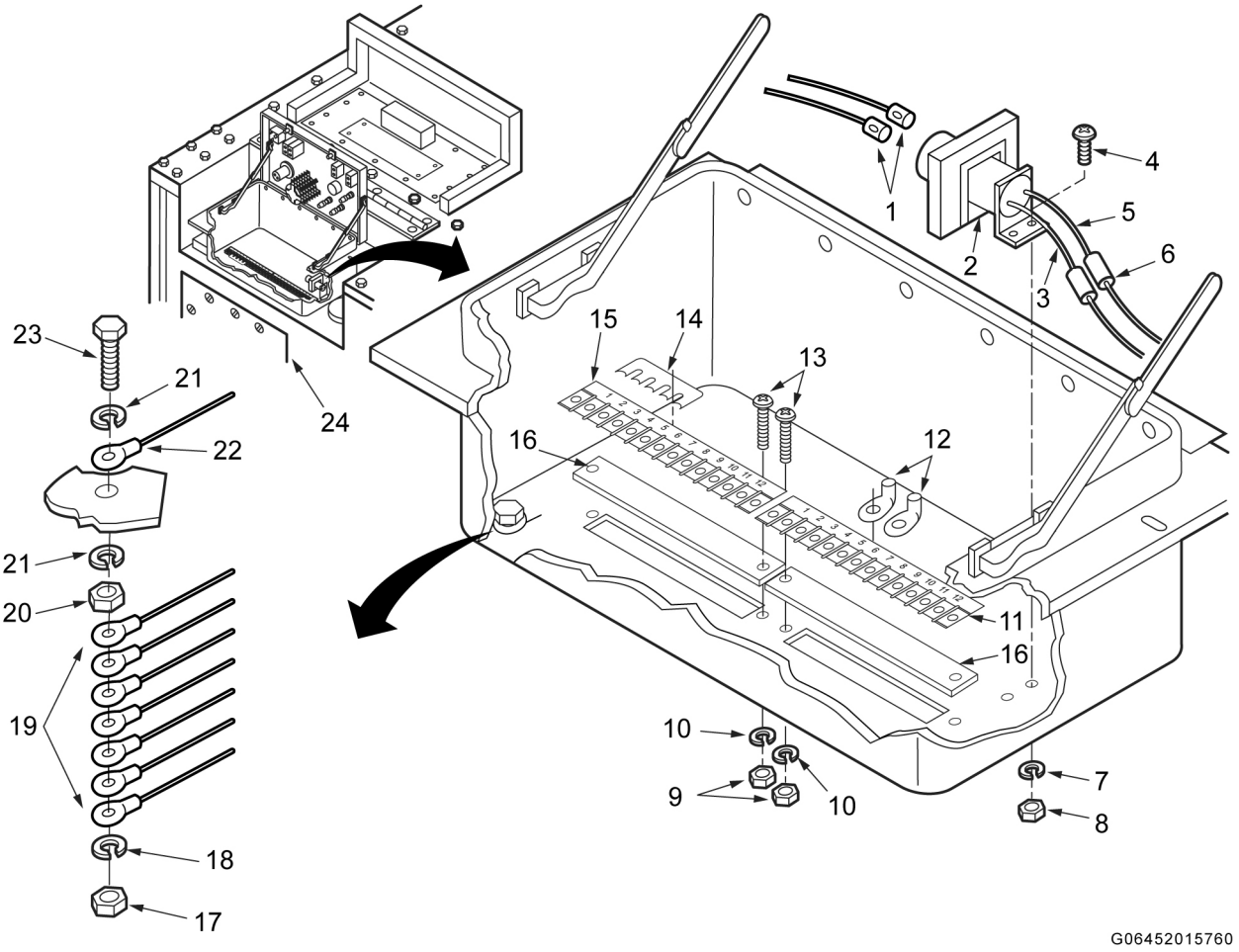


Figure 5. Control Box Panel: Transformer/Terminal Boards Disassembly.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

Terminal Boards/Transformer Assembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

1. Install ground wire (Figure 6, Item 14), two lockwashers (Figure 6, Item 13), screw (Figure 6, Item 15) and nut (Figure 6, Item 12).
2. Install seven wires (Figure 6, Item 11), lockwashers (Figure 6, Item 10) and nut (Figure 6, Item 9).
3. Install two terminal marking strips (Figure 6, Item 1), terminal boards TB3 (Figure 6, Item 6) and TB1 (Figure 6, Item 2), four screws (Figure 6, Item 4), four lockwashers (Figure 6, Item 7) and four nuts (Figure 6, Item 8).
4. Connect wires to top of TB3 (Figure 6, Item 6) as follows.
   a. Connect wire CB2-2 to TB3-1.
   b. Connect wire CB2-1 to TB3-2.
   c. Connect wire S1-13 to TB3-2.
   d. Connect wire TR2-R to TB3-3.
   e. Connect wire S1-16 to TB3-5.
   f. Install two terminals (Figure 6, Item 5) and TB3-6 and TB3-7.
   g. Connect wire TT-POS to TB3-8.
   h. Connect wire DS2-POS to TB3-10.
   i. Connect wire DS3-POS to TB3-11.
5. Connect wires to top of TB1 (Figure 6, Item 2) as follows:
   a. Connect wire CB1-1 to TB1-1.
   b. Connect wire S1-1 to TB1-2.
   c. Position jumper bar (Figure 6, Item 3) between terminals TB1-3 through TB1-7.
   d. Connect wires S1-2 and DS1-NEG to TB1-3.
   e. Connect wire TT-NEG to TB1-5.
   f. Connect wire D52-NE6 to TB1-6.
   g. Connect wires DS3-NEG and TR2-WHT to TB1-7.
   h. Connect wires S1-6 and DS1-POS to TB1-8.
   i. Connect wire S4-1 to TB1-9.
   j. Connect wires S1-11 and S7-2 to TB1-10.
   k. Connect wire S7-1 to TB1-12.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

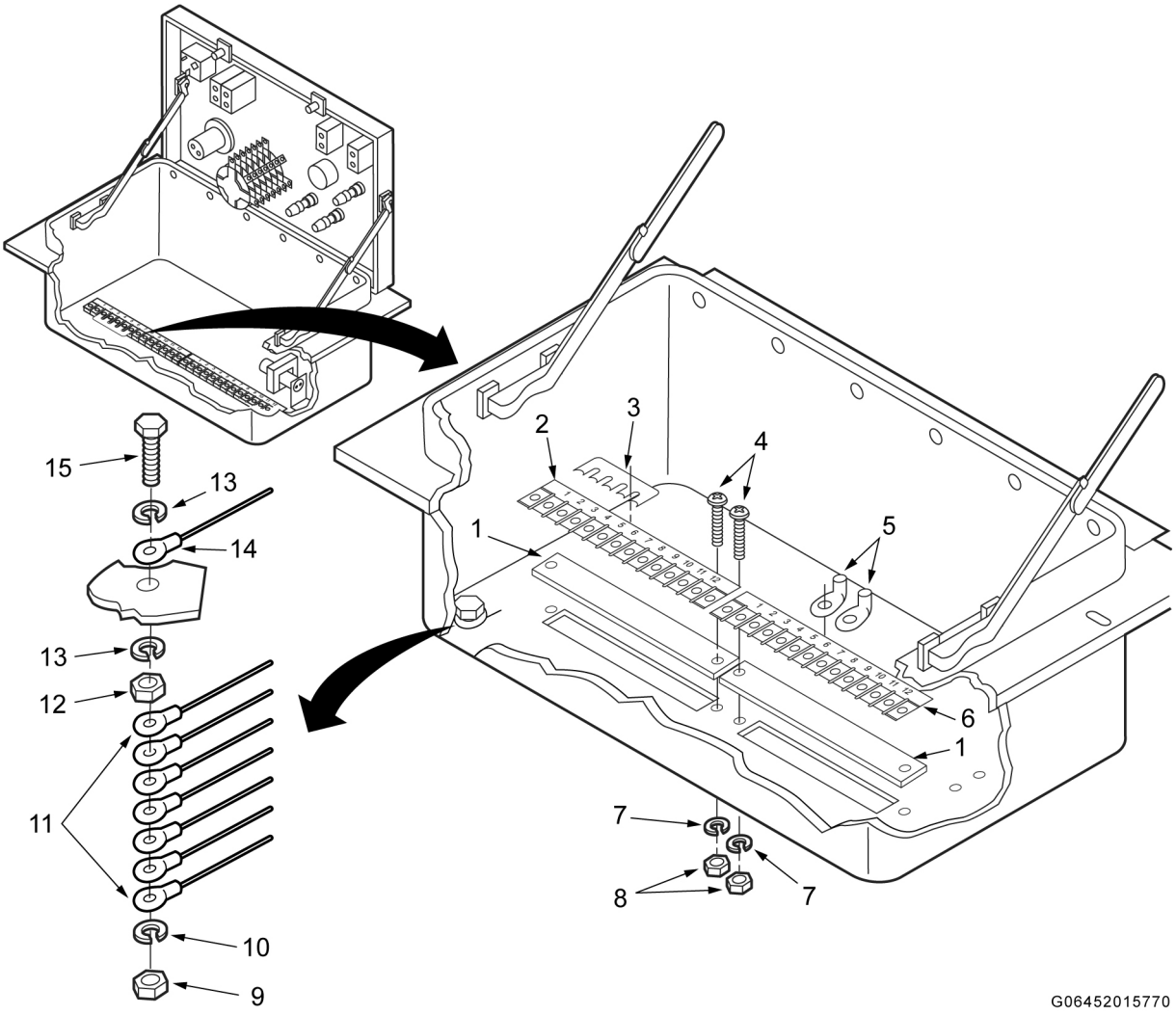


Figure 6. Control Box Panel: Terminal Boards/Transformer Assembly (Sheet 1 of 3).

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

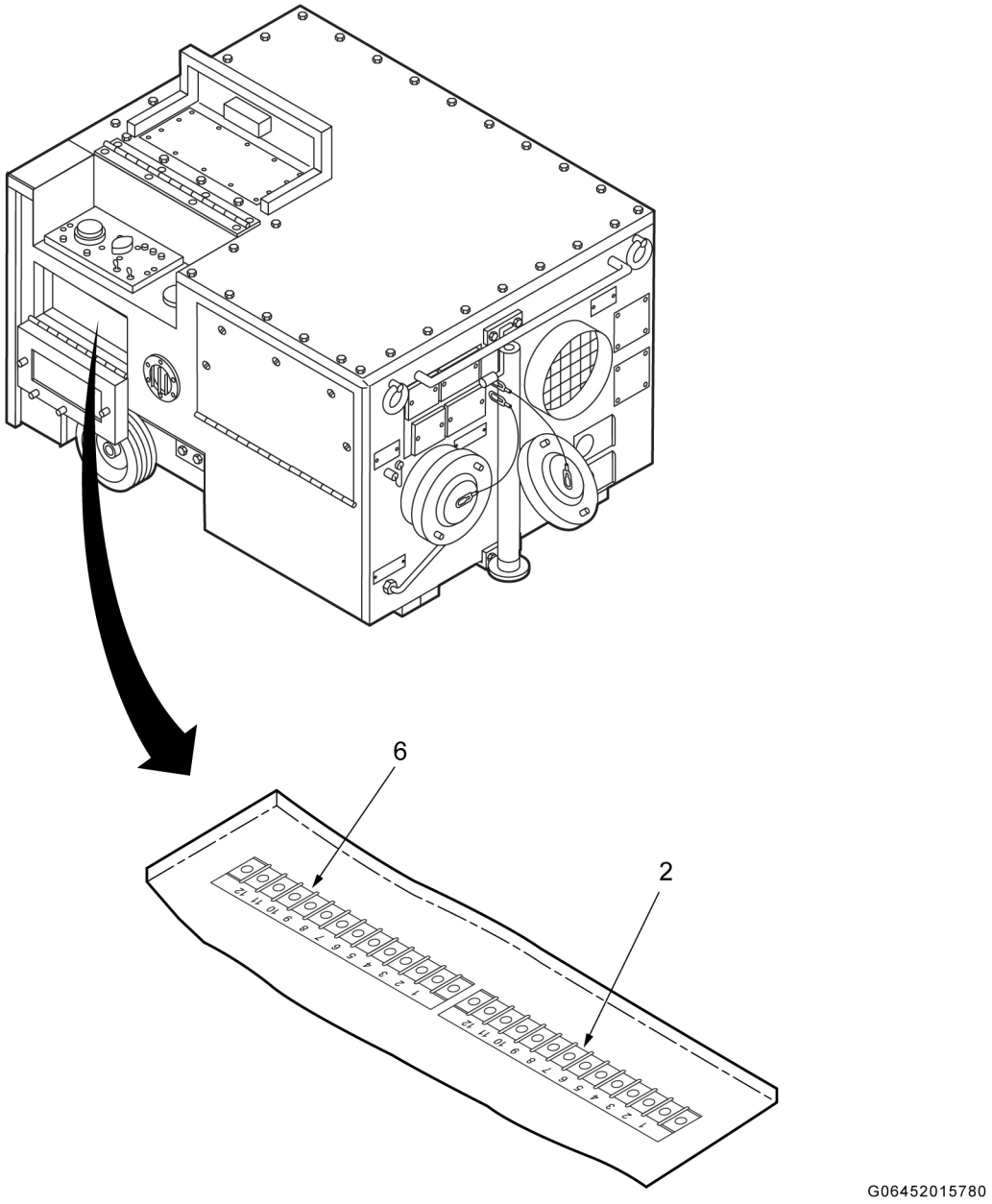


Figure 6. Control Box Panel: Terminal Boards/Transformer Assembly (Sheet 2 of 3).

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

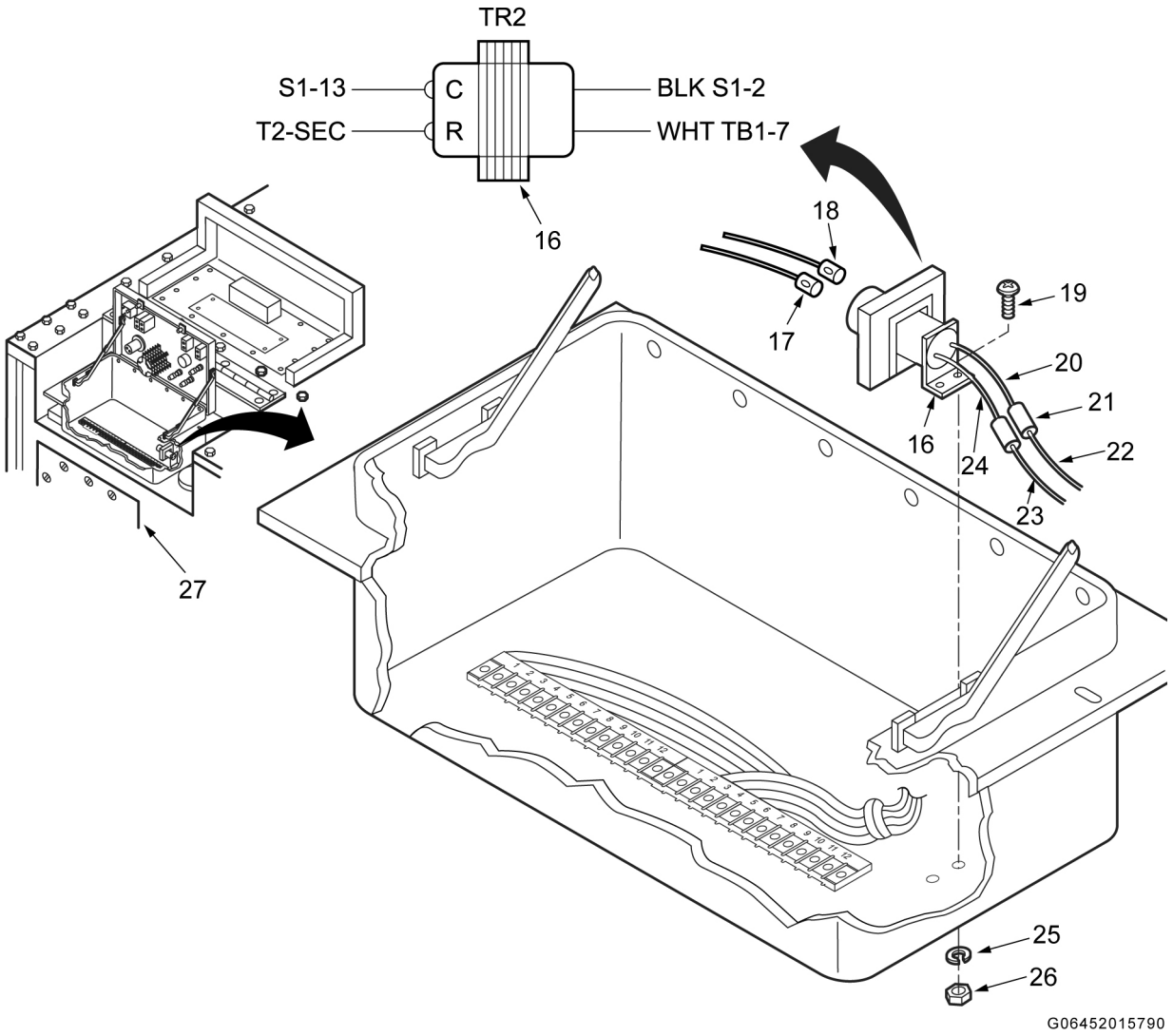


Figure 6. Control Box Panel: Terminal Boards/Transformer Assembly (Sheet 3 of 3).

6. Connect wires to bottom of TB3 (Figure 6, Item 6) as follows.
   a. Connect wire K1-W to TB3-1.
   b. Connect wire J3-A to TB3-2.
   c. Connect wire J3-B to TB3-3.
   d. Connect wires J3-C and S3-1 to TB3-4.
   e. Connect wires S3-3 and K1-B to TB3-5.
   f. Connect wires K1-F1 and D1-YEL to TB3-6.
   g. Connect wires D1-YEL and K1-F2 to TB3-7.
   h. Connect wires K1-ORG and S2-1 to TB3-8.
   i. Connect wires S2-3 and L1-BLK to TB3-9.
   j. Connect wire S2-2 to TB3-10.
   k. Connect wire K1-RED/YEL to TB3-11.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

7. Connect wires to bottom of TB1 (Figure 6, Item 2) as follows.
   a. Connect wire P1-A to TB1-1.
   b. Connect wire P1-B to TB1-2.
   c. Connect wires F1-BLK and B1-T4, T8 to TB1-3.
   d. Connect wires L2-BLK and L3-NEG to TB1-4.
   e. Connect wires B2-WHT and K1-WHT to TB1-5.
   f. Connect wire CR1-AC to TB1-6.
   g. Connect wire L1-BLK to TB1-7.
   h. Connect wires F1-WHT and B1-T1, T5 to TB1-8.
   i. Connect wire L2-BLK to TB1-9.
   j. Connect wire S5-COMM to TB1-10.
   k. Connect wires S5-N.O. and B2-BLK and K1-BLK to TB1-11.
   l. Connect wire L3-POS to TB1-12.
8. Install transformer (Figure 6, Item 16), two screws (Figure 6, Item 19), two lockwashers (Figure 6, Item 25) and two nuts (Figure 6, Item 26).
9. Connect wire TR2-R/TB3-3 (Figure 6, Item 17) and TR2-C/S1-13 (Figure 6, Item 18).
10. Connect the black wire (Figure 6, Item 20) to wire S1-12 (Figure 6, Item 22) and the white wire (Figure 6, Item 24) to wire TB1-7 (Figure 6, Item 23) with two terminal splices (Figure 6, Item 21).
11. Close rear side door (Figure 6, Item 27).

Flameout, High-Temp, and Power Lights Assembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

NOTE

All three lights are the same. Only the cap colors differ. Power light is green, others are red.

1. Install gasket (Figure 7, Item 7), light (Figure 7, Item 10), lockwasher (Figure 7, Item 6) and nut (Figure 7, Item 5).
2. Install bulb (Figure 7, Item 11) and cap (Figure 7, Item 12).
3. Connect wires for each light as follows:
   a. Power Light (Figure 7, Item 1) – connect wire DS1-POS (Figure 7, Item 2) and wire DS1-NEG (Figure 7, Item 3).

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

b. High-Temp Light (Figure 7, Item 4) – connect wire DS2-POS (Figure 7, Item 14) and wire DS2-NEG (Figure 7, Item 13).
c. Flameout Light (Figure 7, Item 10) – connect wire DS3-POS (Figure 7, Item 8) and wire DS3-NEG (Figure 7, Item 9).

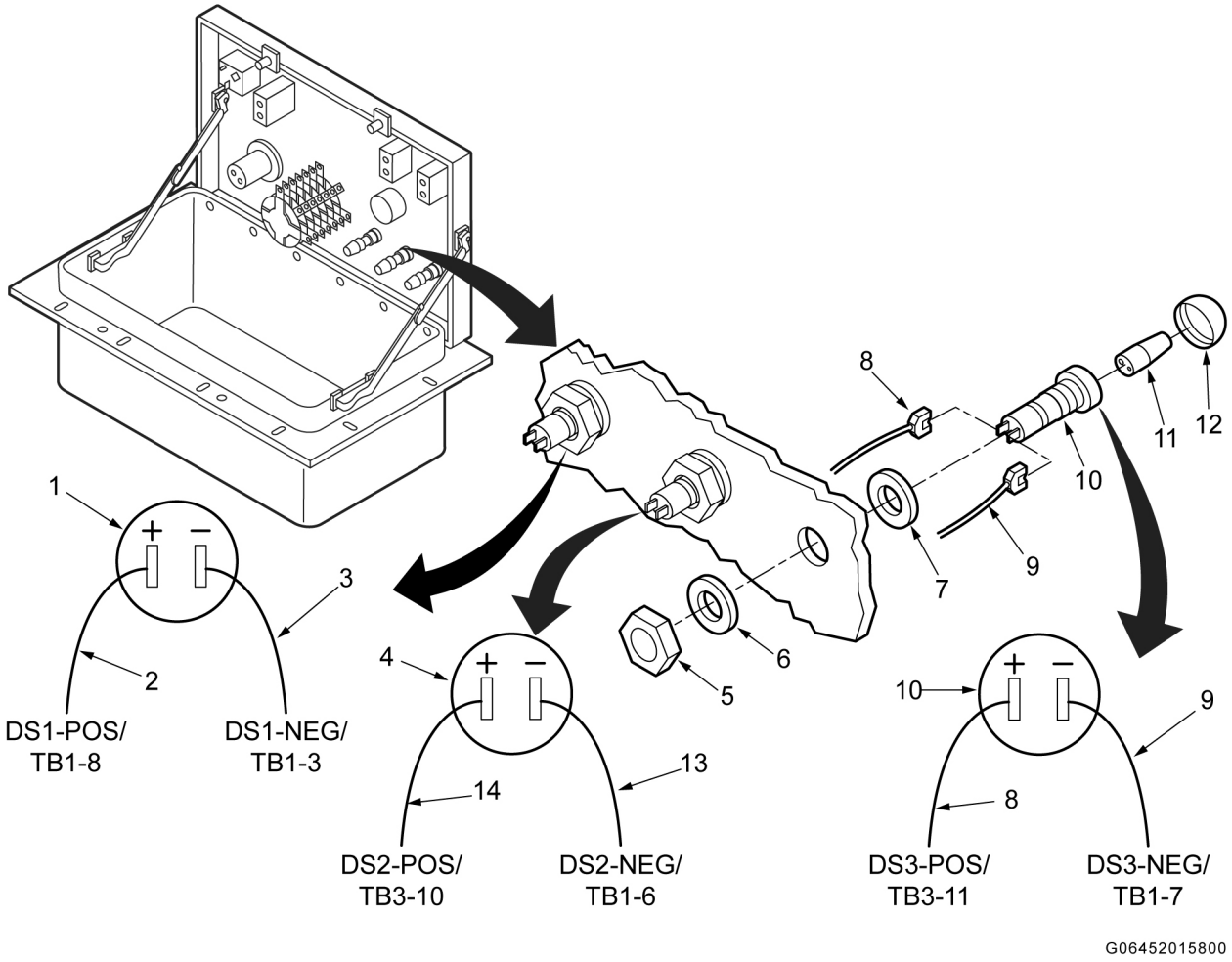


Figure 7. Control Box Panel: Power, High-Temp, and Flameout Lights Assembly.

Purge and Flame Reset Switches Assembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

NOTE

Both switches are the same.

1. Install nut (Figure 8, Item 2), locking ring (Figure 8, Item 3), switch (Figure 8, Item 1), O-ring (Figure 8, Item 4), lockwasher (Figure 8, Item 5) and nut (Figure 8, Item 6).
2. Install extension (Figure 8, Item 7).
3. Connect wire S4-1/TB1-9 (Figure 8, Item 11) and wire S4-2/S1-7 (Figure 8, Item 12) to Purge Switch (Figure 8, Item 1).
4. Connect wire S7-1 (Figure 8, Item 9) and wire S7-2 (Figure 8, Item 10) to Flame Reset Switch (Figure 8, Item 8).

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

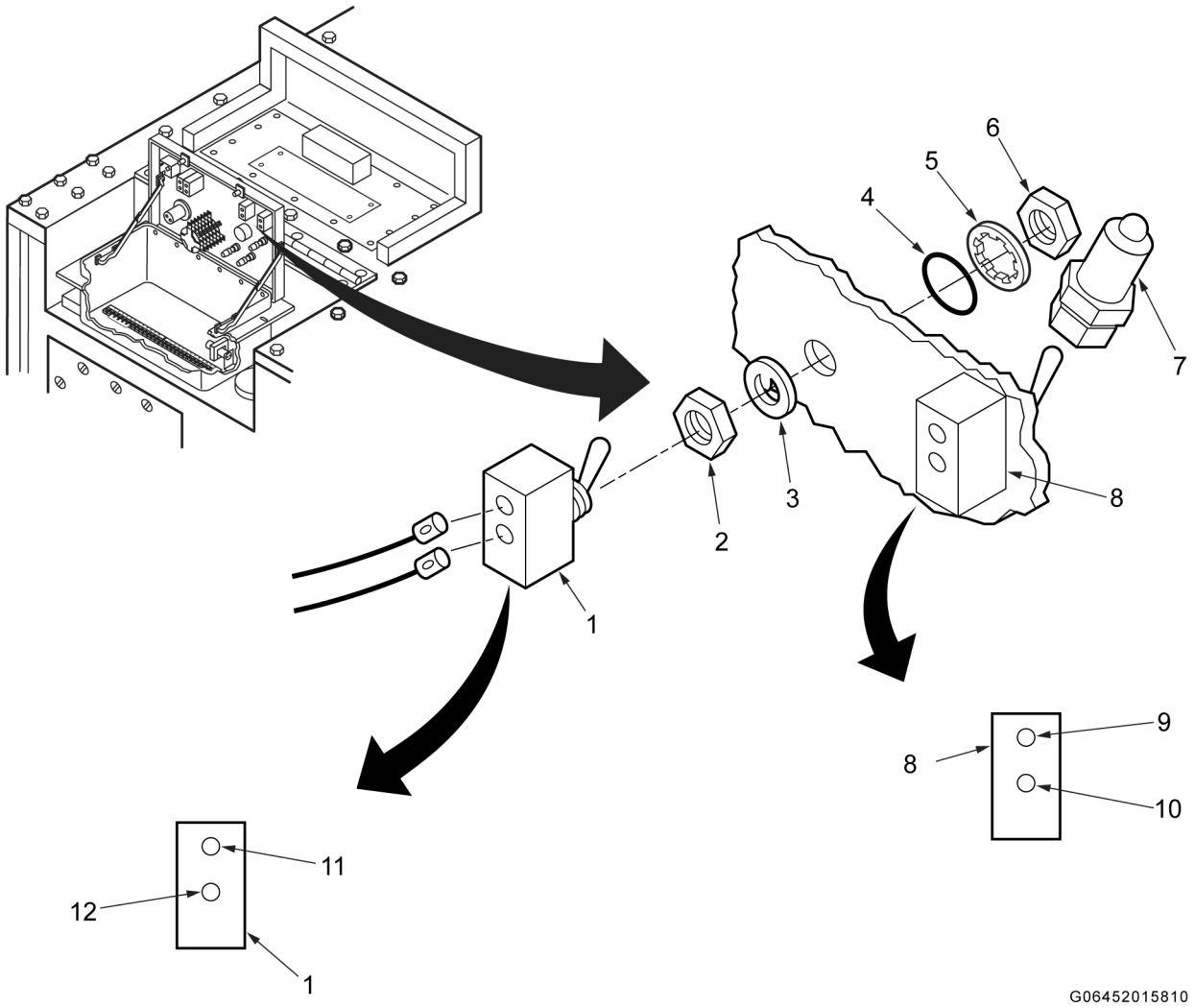


Figure 8. Control Box Panel: Purge and Flame Reset Switches Assembly.

Thermostat and Power Circuit Breakers Assembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

1. Install O-ring (Figure 9, Item 7), THERMOSTAT circuit breaker (Figure 9, Item 6), and nut (Figure 9, Item 2).
2. Connect wire CB2-1/TB3-2 (Figure 9, Item 5) and wire CB2-2/TB3-1 (Figure 9, Item 3).
3. Install O-ring (Figure 9, Item 11), POWER circuit breaker (Figure 9, Item 10), two O-rings (Figure 9, Item 11 and 12), two screws (Figure 9, Item 1), two lockwashers (Figure 9, Item 8) and two nuts (Figure 9, Item 9).
4. Connect wire CB1-1/TB1-1 (Figure 9, Item 15) and wire CB1-2/S1-5 (Figure 9, Item 13).

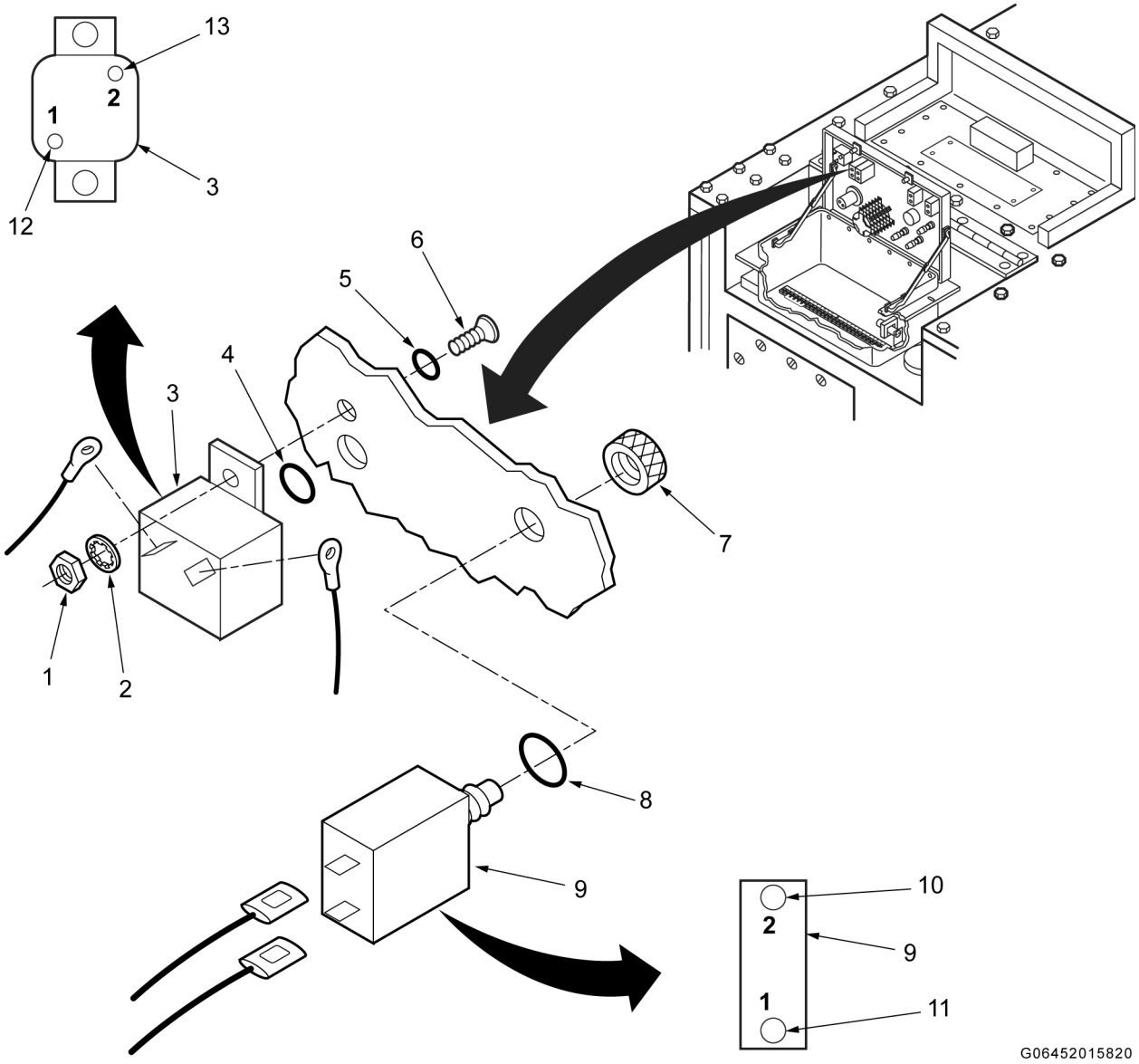


Figure 9. Control Box Panel: Thermostat and Power Circuit Breakers Assembly.

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

Mode Switch and Hourmeter Assembly

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

1. Install gasket (Figure 10, Item 3), hourmeter (Figure 10, Item 4), three screws (Figure 10, Item 5), ground wire (Figure 10, Item 2), three flat washers (Figure 10, Item 1) and three self-locking nuts (Figure 10, Item 16).
2. Connect two wires TT-NEG (Figure 10, Item 12) and TT-POS (Figure 10, Item 11) to the terminals on the hourmeter.
3. Install sleeve Figure 10, Item 13 and nut Figure 10, Item 14.
4. Install MODE SWITCH (Figure 10, Item 15), four O-rings (Figure 10, Item 17) and four screws (Figure 10, Item 18).
5. Install pin (Figure 10, Item 10), knob (Figure 10, Item 9) and screw (Figure 10, Item 8).
6. Connect wires on MODE switch (Figure 10, Item 15) as follows.
   a. Connect wire S1-1/TB1-2 to position S1-1.
   b. Connect wires S1-2/TB1-3 and S1-2/S1-3 to position S1-2.
   c. Connect wires S1-2/S1-3 and S1-3/S1-4 to position S1-3.
   d. Connect wire S1-3/S1-4 to position S1-4.
   e. Connect wires S1-5/CB1-2 and S1-5/S1-9 to position S1-5.
   f. Connect wires S1-6/TB1-8 and S1-6/S1-7 to position S1-6.
   g. Connect wires S1-6/S1-7,S1-7/S4-2, and S1-7/S1-8 to position S1-7.
   h. Connect wire S1-7/S1-8 to position S1-8.
   i. Connect wire S1-5/S1-9 to position S1-9.
   j. Connect wires S1-11/TB1-10 and S1-11/S1-12 to position S1-11.
   k. Connect wires S1-11/S1-12 and S1-12 /TR2-BLK to position S1-12.
   l. Connect wires S1-13/TR2-C and S1-13/TB3-2 to position S1-13.
   m. Connect wire S1-16/TB3-5 to position S1-16.
7. Close control box lid (Figure 10, Item 6) and control panel cover (Figure 10, Item 7).

CONTROL BOX PANEL ASSEMBLY REPAIR - (CONTINUED)

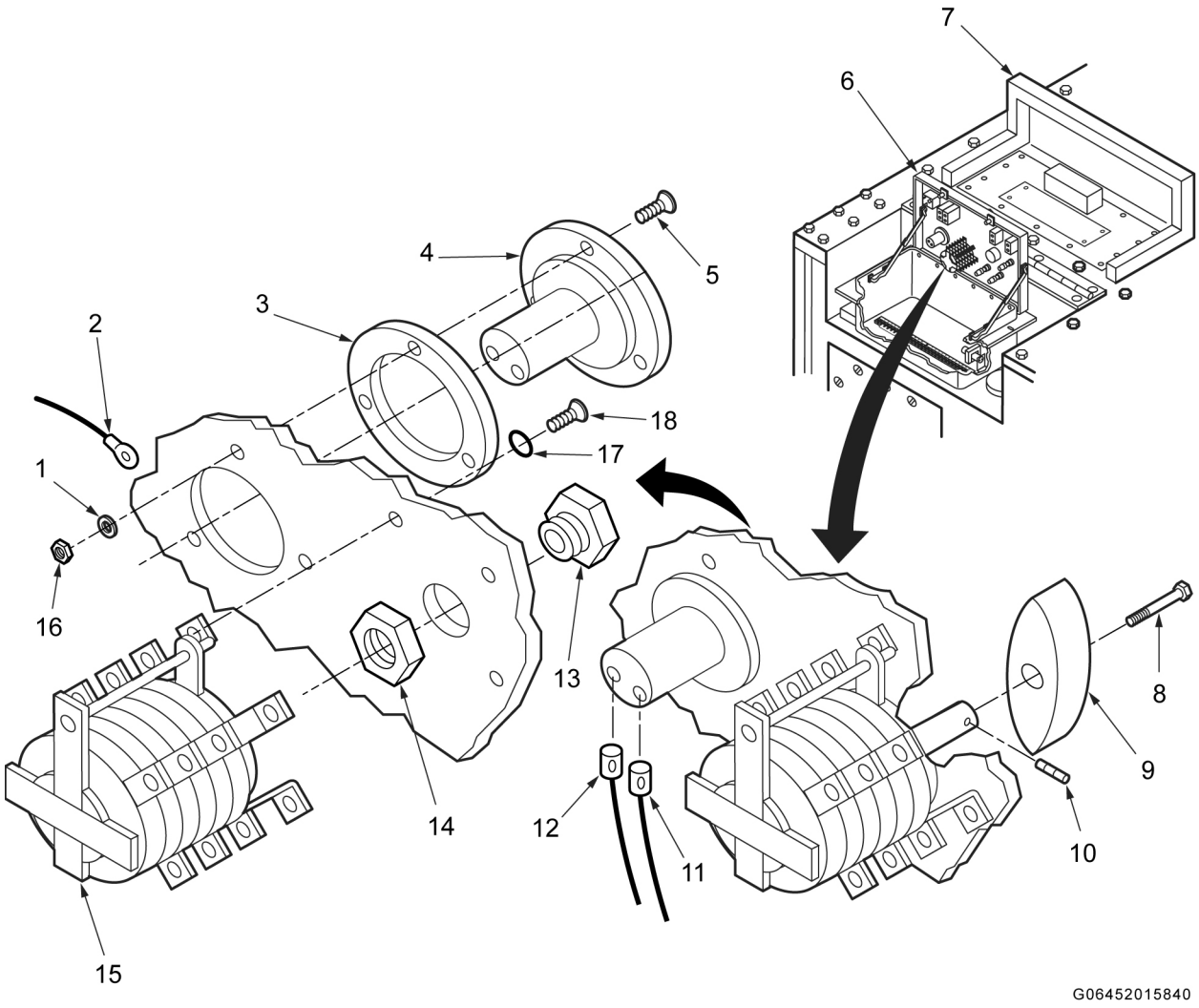


Figure 10. Control Box Panel: Mode Switch and Hourmeter Assembly.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CONTROL BOX ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Drill (Tool Set, SATS) (WP 0117, Item 4)
Bit Set (Tool Set, SATS) (WP 0117, Item 1)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Riveter, Blind, Hand (WP 0117, Item 13)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Blind Rivets (WP 0096, Figure 13, Items 7, 11, and 14)
Gaskets (WP 0096, Figure 13, Items 16, 17, 18, and 19)
Lockwasher (WP 0096, Figure 13, Item 6)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Electrical components disassembled from control panel, WP 0056

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

CONTROL BOX ASSEMBLY REPAIR

Repair is limited to replacement of damaged parts.

Disassemble only to the level required to make repairs.

Inspection

1. Inspect all parts for wear, cracks, corrosion, beat or broken terminals, broken/cracked glass. Inspect all hardware for stripped or damaged threads.

CONTROL BOX ASSEMBLY REPAIR - (CONTINUED)

Removal

1. Open control panel cover (Figure 1, Item 6) and rear side door (Figure 1, Item 5).
2. Loosen two clamps (Figure 1, Item 12) and remove hose (Figure 1, Item 13) and clamps.
3. Remove screw (Figure 1, Item 1), lockwasher (Figure 1, Item 2), flat washer (Figure 1, Item 3) and bar (Figure 1, Item 4). Discard lockwasher.
4. Remove twelve screws (Figure 1, Item 7), twelve lockwashers (Figure 1, Item 8) and twelve flat washers (Figure 1, Item 9). Discard lockwashers.
5. Lift control box assembly (Figure 1, Item 14), out from the ASH.
6. Remove two gaskets (Figure 1, Item 10) and two gaskets (Figure 1, Item 11). If necessary, retain the gaskets to serve as templates for manufacturing replacement gaskets. Otherwise, discard gaskets.

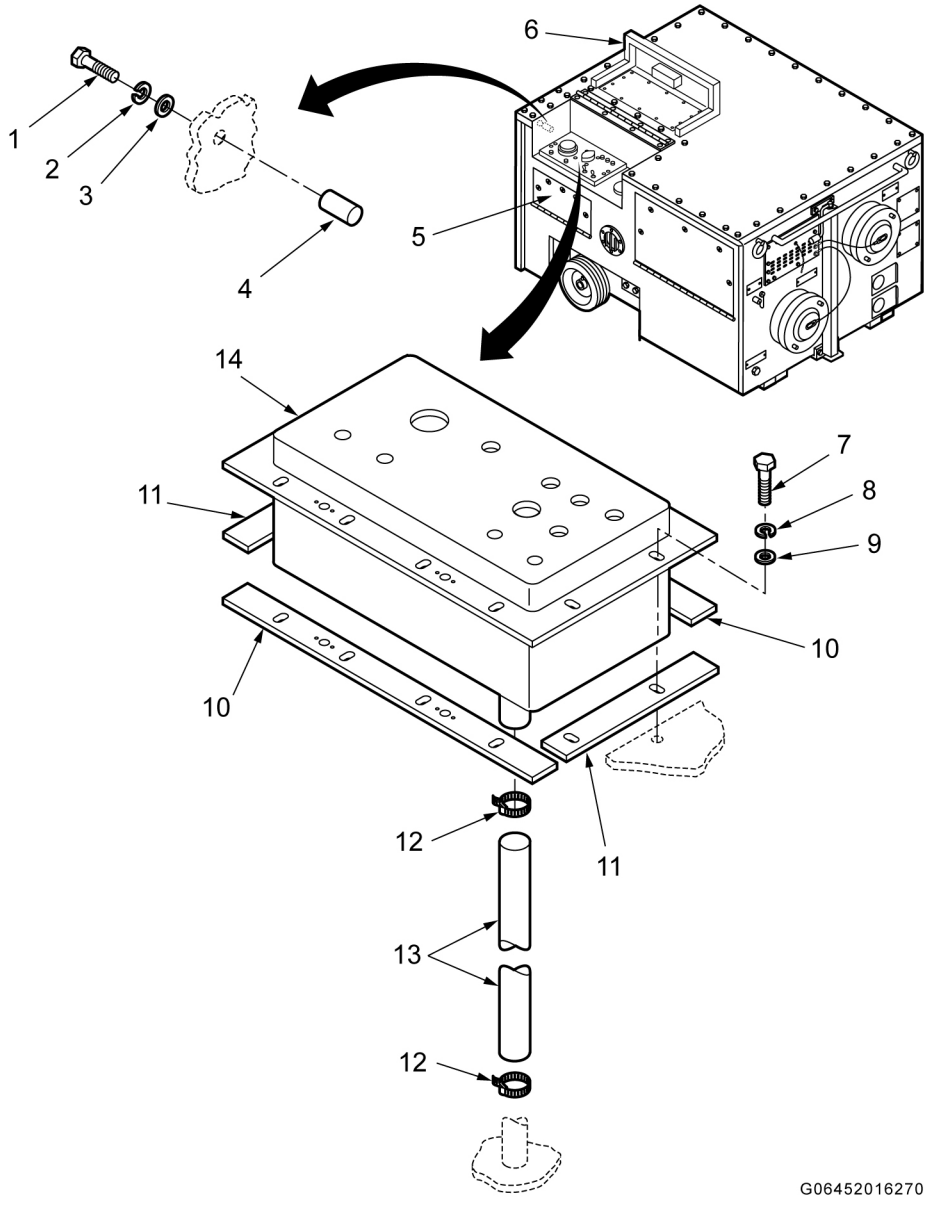


Figure 1. Control Box Removal/Installation.

Disassembly

1. Open control box cover (Figure 2, Item 2).

CONTROL BOX ASSEMBLY REPAIR - (CONTINUED)

2. Remove two self-locking nuts (Figure 2, Item 9), two flat washers (Figure 2, Item 8), two screws (Figure 2, Item 7) and the top end of left cover support (Figure 2, Item 10).
3. Drill out two rivets (Figure 2, Item 11) and remove the bottom end of left cover support (Figure 2, Item 10).
4. Repeat Steps 2 and 3 to remove the right cover support.
5. Drill out eight rivets (Figure 2, Item 5) and remove control panel plate (Figure 2, Item 6).
6. Drill out six rivets (Figure 2, Item 14) and remove cover (Figure 2, Item 20).
7. Drill out six rivets (Figure 2, Item 14) and remove hinge (Figure 2, Item 15).
8. Remove two split washers (Figure 2, Item 19), two turnlock fastener stud assemblies (Figure 2, Item 12), two retaining rings (Figure 2, Item 18) and two turnlock fastener eyelets (grommets) (Figure 2, Item 13).
9. Remove two gaskets (Figure 2, Item 16) and two gaskets (Figure 2, Item 17). If necessary, retain the gaskets to serve as templates for manufacturing replacement gaskets. Otherwise, discard gaskets.

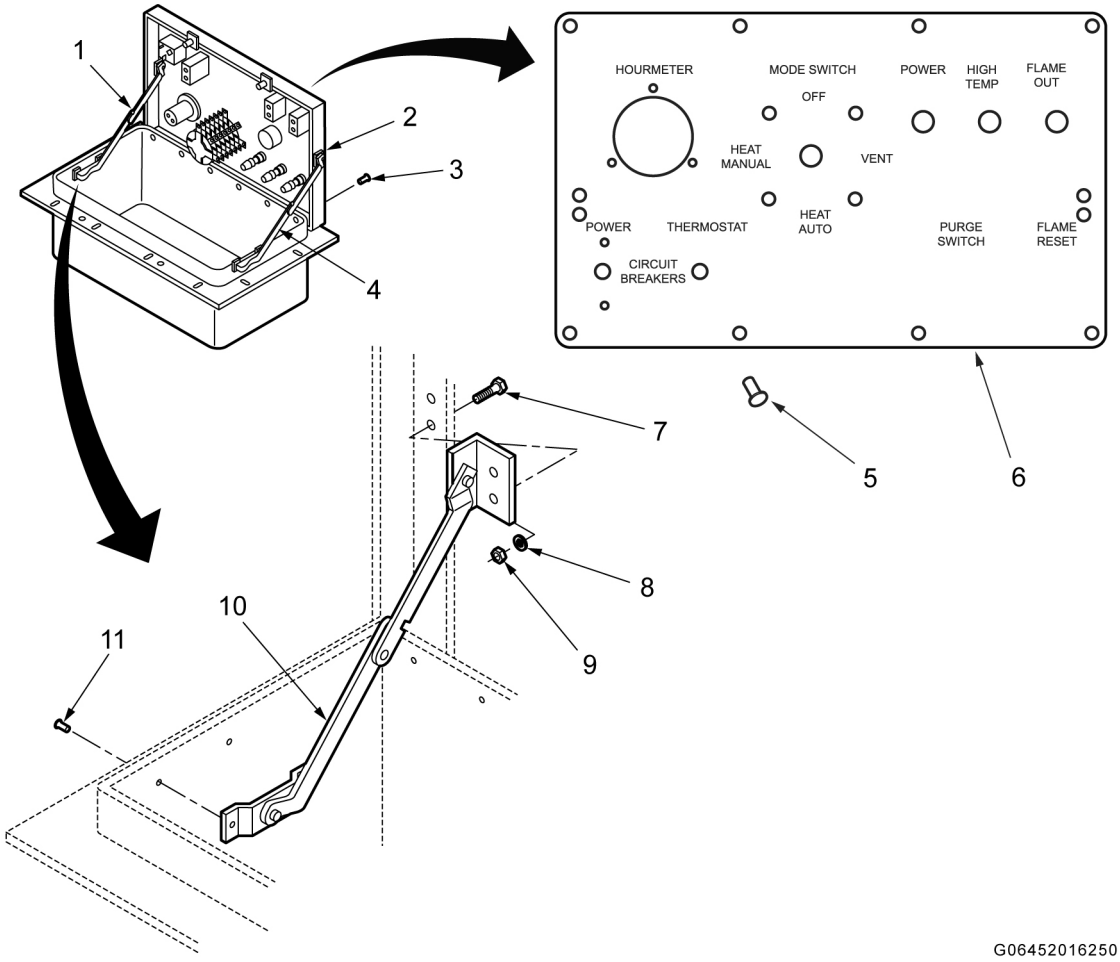


Figure 2. Control Box Disassembly/Assembly (Sheet 1 of 2).

CONTROL BOX ASSEMBLY REPAIR - (CONTINUED)

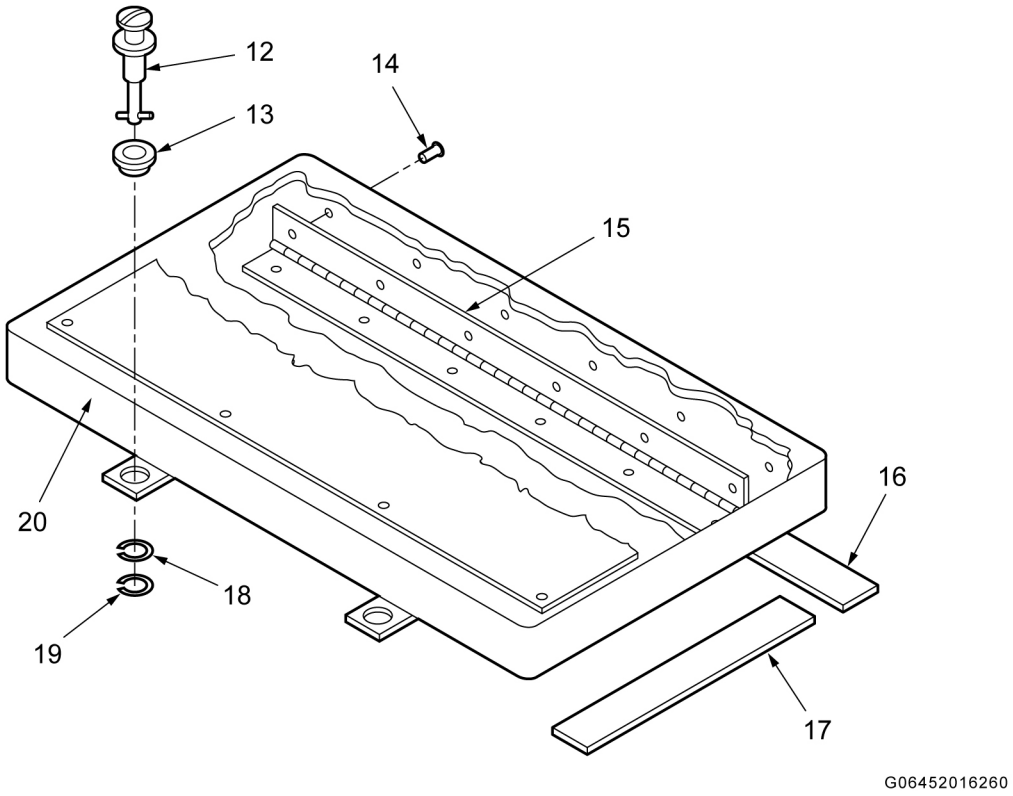


Figure 2. Control Box Disassembly/Assembly (Sheet 2 of 2).

Assembly

1. Install two gaskets (Figure 2, Item 17) and two gaskets (Figure 2, Item 16).
2. Install two turnlock fastener eyelets (grommets) (Figure 2, Item 13) and two grommet retaining rings (Figure 2, Item 18).
3. Install two turnlock fastener stud assemblies (Figure 2, Item 12) and two split washers (Figure 2, Item 19).
4. Install control panel plate (Figure 2, Item 6) and eight rivets (Figure 2, Item 5). Make sure that the plate is correctly oriented on the control box cover.
5. Position hinge (Figure 2, Item 15) on inside rear edge of cover (Figure 2, Item 20) and install six rivets (Figure 2, Item 14).
6. Position cover (Figure 1, Item 2) on control box (Figure 1, Item 4) and secure the hinge to the box with six rivets (Figure 2, Item 14).
7. Position bottom end of left support (Figure 2, Item 10) and secure with two rivets (Figure 2, Item 11).
8. Install top end of left support (Figure 2, Item 10), two screws (Figure 2, Item 7), two flat washers (Figure 2, Item 8) and two locknuts (Figure 2, Item 9).
9. Repeat Steps 7 and 8 for the right support.

Installation

1. Install two gaskets (Figure 1, Item 10), and two gaskets (Figure 1, Item 11).
2. Insert control box assembly (Figure 1, Item 14) into control compartment.
3. Install twelve flat washers (Figure 1, Item 9), twelve lockwashers (Figure 1, Item 8) and twelve screws (Figure 1, Item 7).
4. Install flat washer (Figure 1, Item 3), lockwasher (Figure 1, Item 2), screw (Figure 1, Item 1) and bar (Figure 1, Item 4).

CONTROL BOX ASSEMBLY REPAIR - (CONTINUED)

NOTE

Drain tube must be routed under the air inlet of the combustion air fan assembly.

5. Install drain tube (Figure 1, Item 13) and secure with two clamps (Figure 1, Item 12).
6. Close control box lid (Figure 2, Item 2), control panel cover (Figure 1, Item 6), and door (Figure 1, Item 5).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

COMBUSTOR CONTROL RELAY ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Offset Phillips Screwdriver (Tool Set, SATS) (WP 0113, Item 9)
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0096, Figure 15, Item 3)
Tags, Marker (WP 0116, Item 15)
Terminal Splice (WP 0118, Item 45)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References

Equipment Condition
ASH disconnected from power source

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

COMBUSTOR CONTROL RELAY ASSEMBLY REPAIR

Repair is limited to the replacement of defective parts.

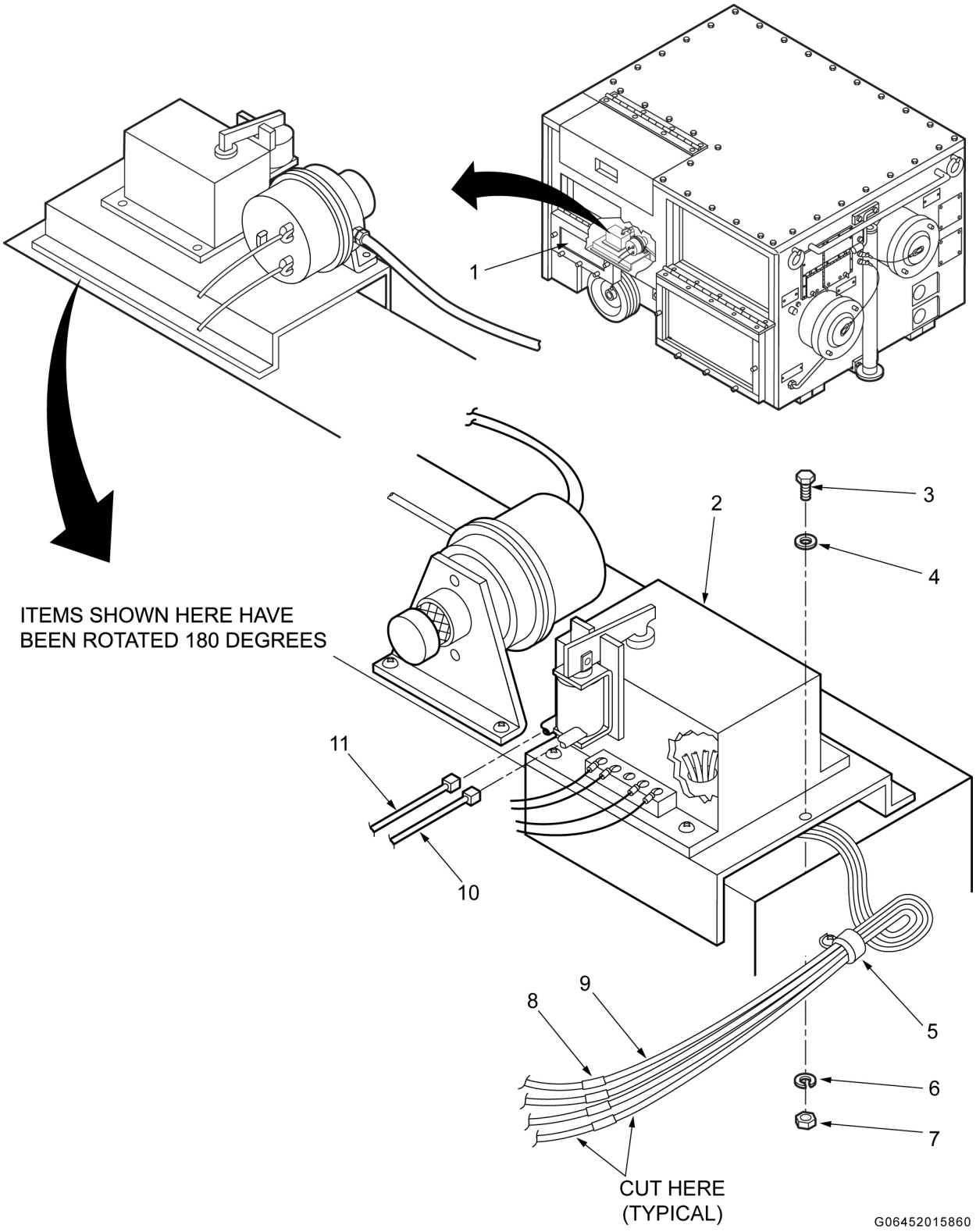
Disassemble only to the level required to make repairs.

Removal

1. Open rear side door (Figure 1, Item 1).
2. Remove screw (Figure 1, Item 3), flat washer (Figure 1, Item 4), lockwasher (Figure 1, Item 6), and nut (Figure 1, Item 7) from left side of relay assembly as viewed from the rear side door. Discard lockwashers.
3. Release clamp (Figure 1, Item 5), freeing four colored wires (Figure 1, Item 9) from the Combustor Control Relay bracket.
4. Tag and separate wires at splices (Figure 1, Item 8). Discard splices.
5. Tag and unplug wires (Figure 1, Item 10) and (Figure 1, Item 11) from the back of the solenoid.
6. Loosen screw (Figure 1, Item 16) and lift cover (Figure 1, Item 12) and solenoid off of relay assembly (Figure 1, Item 15).
7. Disconnect four wires (Figure 1, Item 17) from combustor relay by removing four screws (Figure 1, Item 18) from the back of the relay assembly.

COMBUSTOR CONTROL RELAY ASSEMBLY REPAIR - (CONTINUED)

8. Remove four machine screws (Figure 1, Item 13) and lockwashers (Figure 1, Item 14) from the relay chassis. Discard lockwashers.
9. Lift the chassis, carefully guiding the four wires out of the bracket.



COMBUSTOR CONTROL RELAY ASSEMBLY REPAIR - (CONTINUED)

Figure 1. Combustor Control Relay Removal (Sheet 1 of 2).

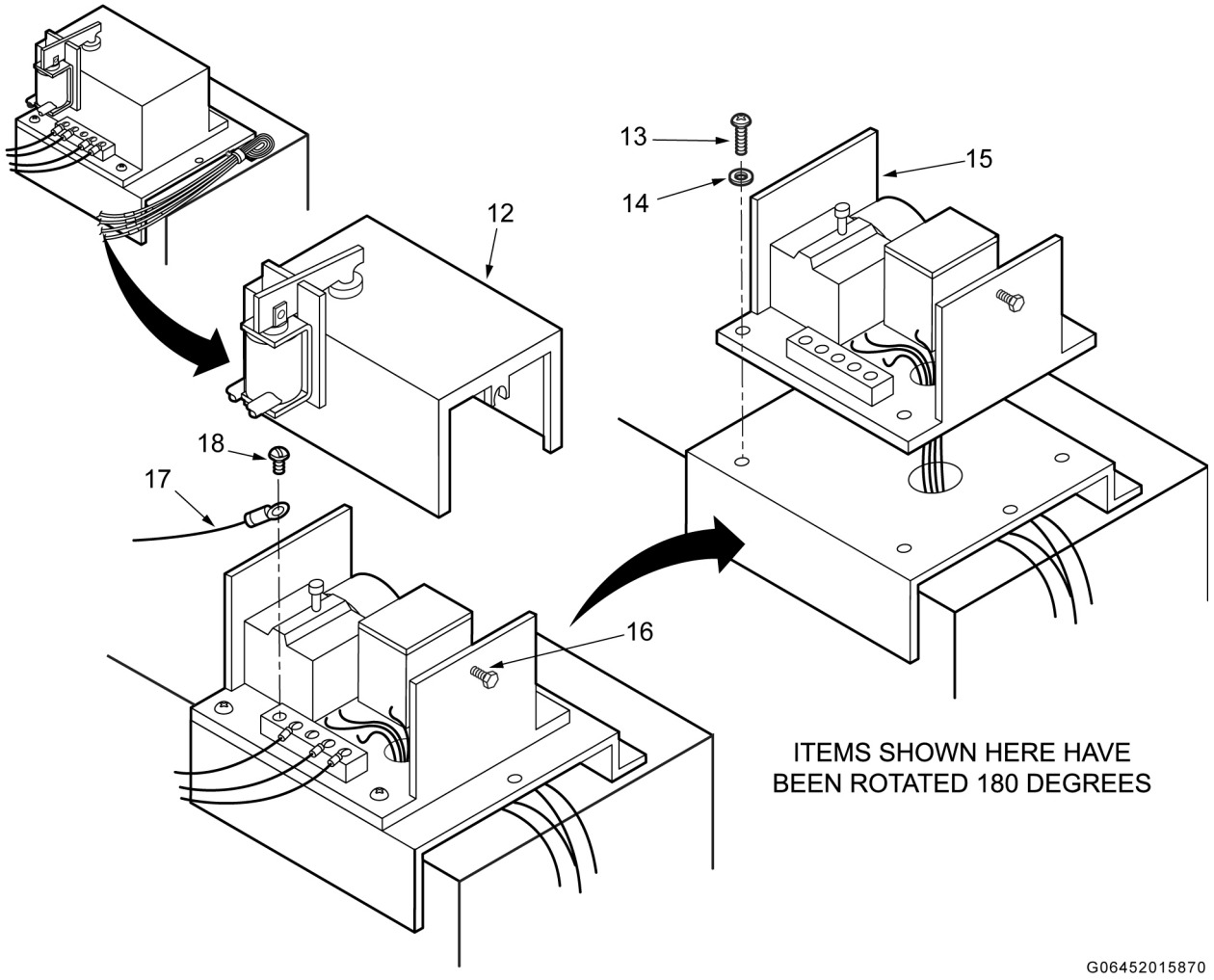


Figure 1. Combustor Control Relay Removal (Sheet 2 of 2).

Disassembly

1. Remove nut (Figure 2, Item 1), machine screw (Figure 2, Item 6), and lever arm (Figure 2, Item 2).
2. Remove two screws (Figure 2, Item 4), solenoid (Figure 2, Item 7) and retainer plate (Figure 2, Item 3) from Combustor Control Relay cover (Figure 2, Item 5).

COMBUSTOR CONTROL RELAY ASSEMBLY REPAIR - (CONTINUED)

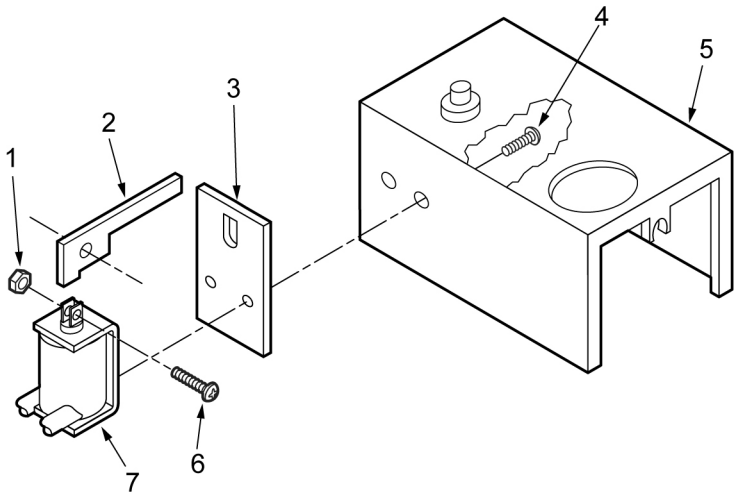


Figure 2. Combustor Control Relay Disassembly/Assembly.

Assembly

NOTE

Lever arm must move freely. Do not overtighten nut.

1. Install retainer plate (Figure 2, Item 3) and solenoid (Figure 2, Item 7) on combustor control relay cover (Figure 2, Item 5) and secure with two screws (Figure 2, Item 4).
2. Place lever arm (Figure 2, Item 2) through hole in retainer plate (Figure 2, Item 3) and in slot on top of solenoid (Figure 2, Item 7).
3. Insert screw (Figure 2, Item 6) and nut (Figure 2, Item 1) to secure lever arm (Figure 2, Item 2).

Installation

1. Position combustor control relay (Figure 3, Item 4) while guiding its four colored wires through the hole in the assembly mounting bracket (Figure 3, Item 5) with the wires extending to the left and out toward the rear of the ASH.
2. Install four lockwashers (Figure 3, Item 2) and four screws (Figure 3, Item 3).
3. Install wires (Figure 3, Item 7), (Figure 3, Item 8), (Figure 3, Item 9), and (Figure 3, Item 10) with four screws (Figure 3, Item 11) as follows:
   a. Wire (Figure 3, Item 10) TB3-1/K1-W connects to position W.
   b. Wire (Figure 3, Item 9) TB3-5/K1-B connects to position B.
   c. Wire (Figure 3, Item 8) TB3-7/K1-F2 connects to position F2.
   d. Wire (Figure 3, Item 7) TB3-6/K1-F1 connects to position F1.
4. Install cover (Figure 3, Item 1) on combustor control relay (Figure 3, Item 4) and tighten screw (Figure 3, Item 6).
5. Install wires (Figure 3, Item 20) and (Figure 3, Item 21).
6. Insert the four colored wires (Figure 3, Item 15), (Figure 3, Item 16), (Figure 3, Item 18), and (Figure 3, Item 19) through clamp (Figure 3, Item 14) and connect the wires using four crimp splices (Figure 3, Item 17) as follows:
   a. Black wire (Figure 3, Item 17) connects to wire TB1-11.
   b. White wire (Figure 3, Item 18) connects to wire TB1-5.
   c. Orange wire (Figure 3, Item 14) connects to wire TB3-8.
   d. Red/Yellow wire (Figure 3, Item 15) connects to wire TB3-11.
7. Install wire clamp (Figure 3, Item 14) and screw (Figure 3, Item 13) and its associated hardware.

COMBUSTOR CONTROL RELAY ASSEMBLY REPAIR - (CONTINUED)

8. Close rear side door (Figure 3, Item 12).

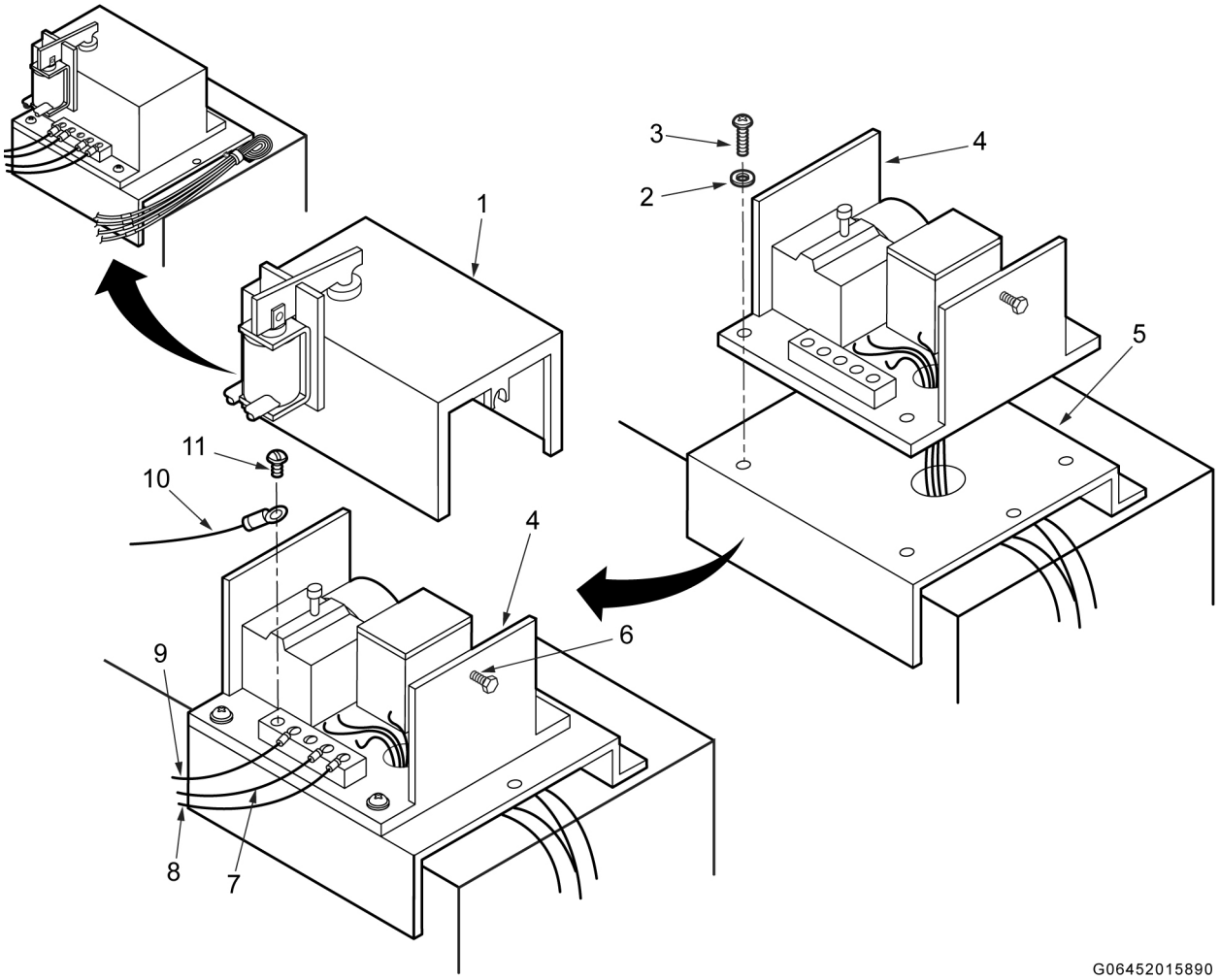


Figure 3. Combustor Control Relay Installation (Sheet 1 of 2).

COMBUSTOR CONTROL RELAY ASSEMBLY REPAIR - (CONTINUED)

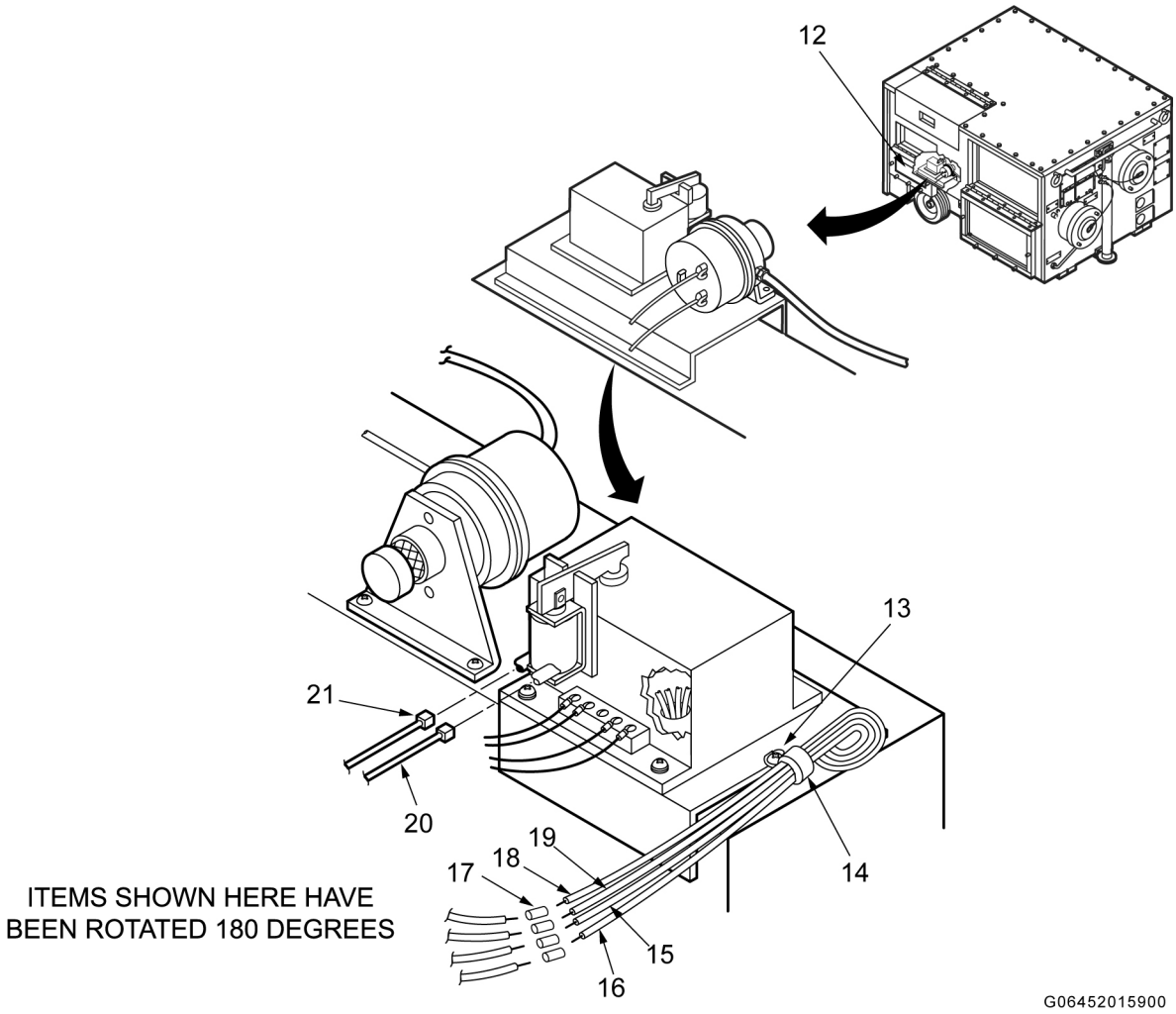


Figure 3. Combustor Control Relay Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

AIR PRESSURE SWITCH TEST, REPAIR, AND ADJUSTMENT

INITIAL SETUP:

Tools and Special Tools
Multimeter (WP 0117, Item 8)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0096, Figure 15, Item 3)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 4-25.11

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

AIR PRESSURE SWITCH TEST, REPAIR, AND ADJUSTMENT

Repair is limited to replacement of defective components.

Test

1. Open control panel cover (Figure 1, Item 3) and control panel lid (Figure 1, Item 1).
2. Connect power cable (Figure 1, Item 4) to power source.
3. Connect a multimeter to TB1 (Figure 1, Item 5), terminals 10 and 11. If meter indicates continuity, switch is closed; leave multimeter connected and proceed to the ADJUSTMENT section below in this work package.
4. Ensure that all access doors are closed.
5. Turn MODE SWITCH (Figure 1, Item 2) to the VENT position and observe meter indication.
   a. If the air switch closes the meter will indicate continuity, proceed to Step 6.
   b. If the air switch does not close the meter will indicate infinity and the switch is open; leave multimeter attached and proceed to the ADJUSTMENT section below in this work package.
6. Turn MODE SWITCH (Figure 1, Item 2) to the OFF position.
7. Disconnect multimeter, close control panel lid (Figure 1, Item 1) and control panel cover (Figure 1, Item 3).
8. Disconnect power cable (Figure 1, Item 4) from power source.

AIR PRESSURE SWITCH TEST, REPAIR, AND ADJUSTMENT - (CONTINUED)

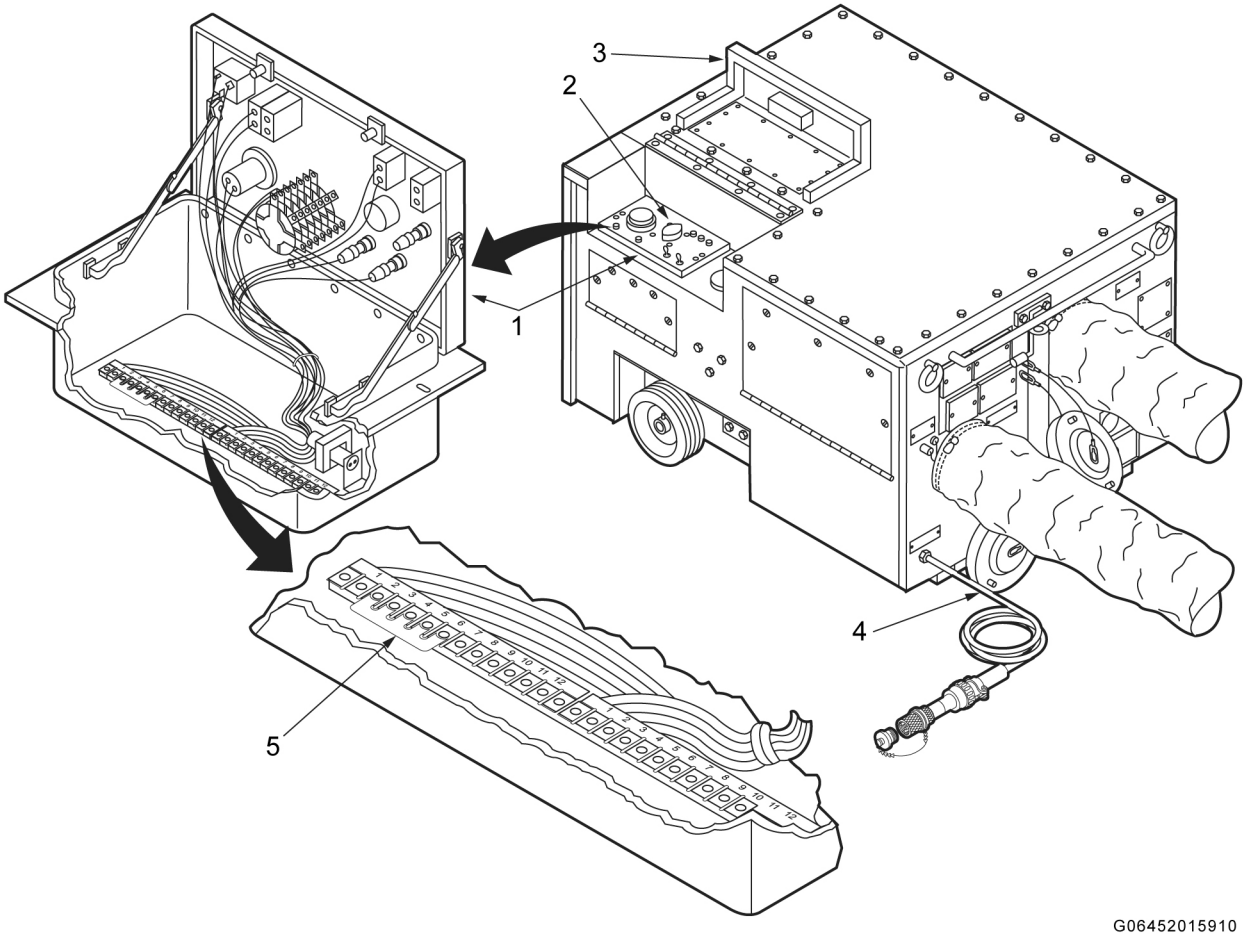


Figure 1. Air Pressure Switch: Test.

Removal

1. Open rear side door (Figure 2, Item 1) and front side door (Figure 2, Item 2).
2. Tag and disconnect wires (Figure 2, Item 7) and (Figure 2, Item 8) from air switch (Figure 2, Item 6).
3. Remove air line (Figure 2, Item 4), and fittings (Figure 2, Item 3) and (Figure 2, Item 5).
4. Remove two screws (Figure 2, Item 10), two lockwashers (Figure 2, Item 9) and air switch (Figure 2, Item 6). Discard lockwashers.

Installation

1. Install air switch (Figure 2, Item 6), two lockwashers (Figure 2, Item 9) and two screws (Figure 2, Item 10).
2. Install fittings (Figure 2, Item 3) and (Figure 2, Item 5), and air line (Figure 2, Item 4).
3. Connect wires (Figure 2, Item 7) and (Figure 2, Item 8) as follows:
   a. Connect wire TB1-11/S5-NO to the top (normally open) post.
   b. Connect wire TB1-10/S5-COM to the bottom (common) post.
4. Close doors (Figure 2, Item 2) and (Figure 2, Item 1).

AIR PRESSURE SWITCH TEST, REPAIR, AND ADJUSTMENT - (CONTINUED)

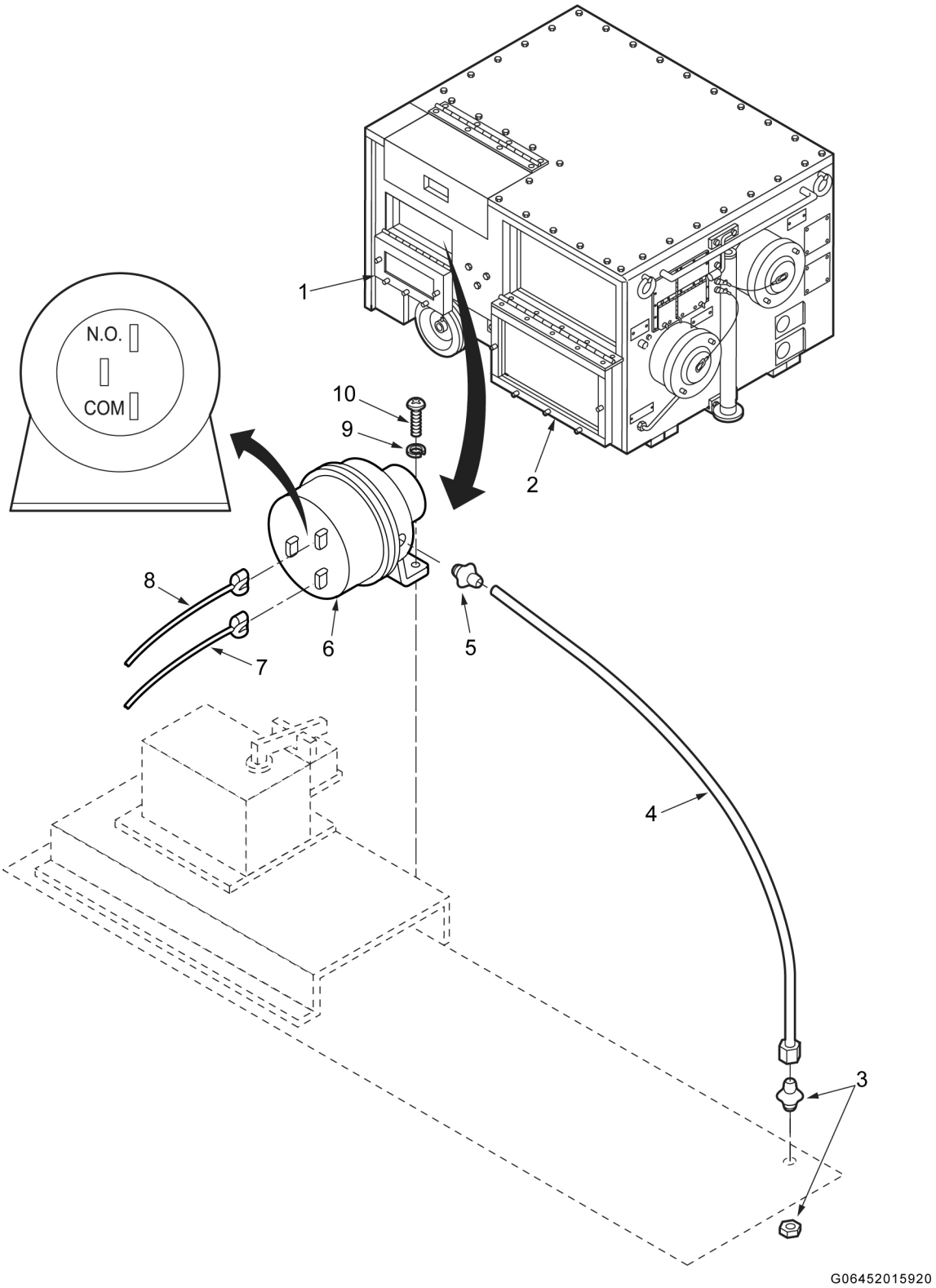


Figure 2. Air Pressure Switch Removal/Installation.

AIR PRESSURE SWITCH TEST, REPAIR, AND ADJUSTMENT - (CONTINUED)

Adjustment

1. Disconnect power cable (Figure 3, Item 5) from power source.
2. Remove return air duct (Figure 3, Item 6) from the ASH.
3. Open rear side door (Figure 3, Item 4).
4. If testing indicated air switch was closed, proceed as follows:
   a. Remove cover (Figure 3, Item 9) from air switch (Figure 3, Item 10), and loosen locknut (Figure 3, Item 7).
   b. Turn adjustment screw (Figure 3, Item 8) clockwise/in until meter indicates infinity. Turn adjustment screw one-quarter turn more.
   c. Tighten locknut (Figure 3, Item 7), install cover (Figure 3, Item 9), and proceed to Step 12.
5. If testing indicated air switch was open, proceed to Step 6.
6. Remove cover (Figure 3, Item 9) from air switch (Figure 3, Item 10), loosen locknut (Figure 3, Item 7) and turn adjustment screw (Figure 3, Item 8) one-half turn counterclockwise/out.
7. Close rear side door (Figure 3, Item 4).
8. Connect power cable (Figure 3, Item 5) to power source.
9. Turn MODE SWITCH (Figure 3, Item 3) to the VENT position and observe meter indication.
   a. If the air switch (Figure 3, Item 10) closes the meter will indicate continuity, turn MODE SWITCH (Figure 3, Item 3) to OFF and proceed to Step 10.
   b. If the air switch (Figure 3, Item 10) does not close the meter will indicate infinity. Repeat Steps 1, 2, 3, 6, 7, 8, and 9.
   c. If the air switch (Figure 3, Item 10) does not close after turning the adjustment screw (Figure 3, Item 8) completely clockwise/in replace the air switch.
10. Disconnect multimeter, close control panel lid (Figure 3, Item 1) and control panel cover (Figure 3, Item 2).
11. Open rear side door (Figure 3, Item 4).
12. Tighten locknut (Figure 3, Item 8) and install cover (Figure 3, Item 9).
13. Close rear side door (Figure 3, Item 4).
14. Connect return air duct (Figure 3, Item 6) to unit.

AIR PRESSURE SWITCH TEST, REPAIR, AND ADJUSTMENT - (CONTINUED)

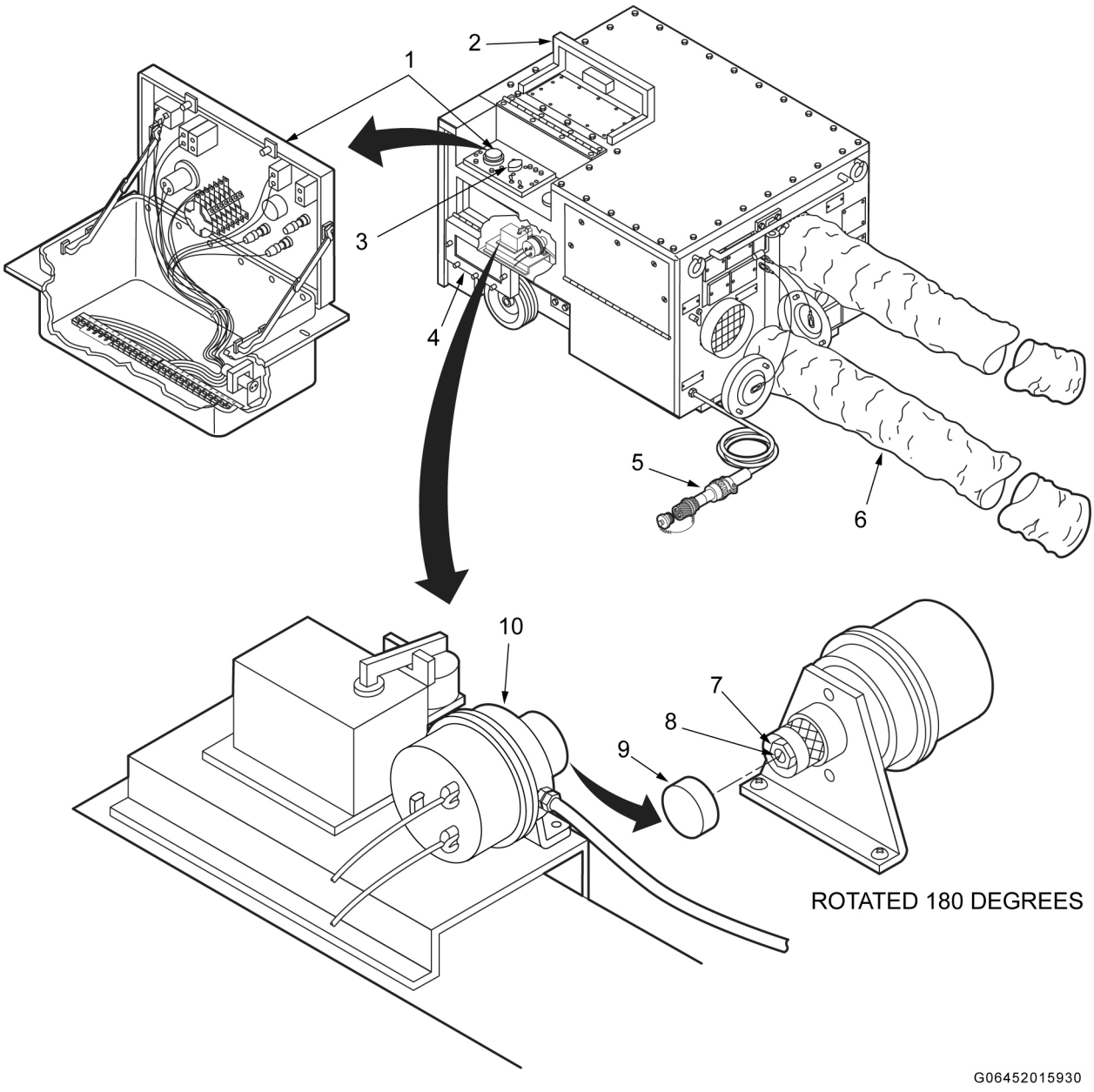


Figure 3. Air Pressure Switch Adjustment.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

EXTERNAL FUEL CONNECTION AND HOSE REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)
Tool Set, SATS (WP 0117, Item 8)

Materials/Parts
Protective Dust Cap (WP 0097, Figure 16, Item 6)
Protective Dust Plug (WP 0097, Figure 16, Item 5)
Quick-Disconnect Coupling (WP 0097, Figure 16, Item 4)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1

Equipment Condition
ASH disconnected from power source

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

EXTERNAL FUEL CONNECTION AND HOSE REPAIR

Disassemble only to the level required to make repairs. Repair is limited to replacement of defective parts.

Removal

1. External Fuel Hose
   a. Detach the external fuel supply hose from the ASH by pulling back on the ring on the half quick-disconnect coupling (Figure 1, Item 6) at the straight pipe-to-tube adapter (Figure 1, Item 7) marked EXTERNAL FUEL SUPPLY.
   b. If necessary, detach the opposite end of the hose from its external tank straight pipe-to-tube adapter (Figure 1, Item 2) as in Step a. Replace with new hose assembly.
2. External Fuel Connection
   a. Open the rear side door to access fuel lines and ASH rear panel (Figure 2, Item 1).
   b. Disconnect the U-shaped metal-tube fuel line (Figure 2, Item 2) from the straight pipe-to-tube adapter (Figure 2, Item 5).
   c. Loosen the U-shaped metal-tube fuel line at its connection to the fuel selector valve (Figure 2, Item 3).
   d. Remove retaining nut (Figure 2, Item 4) and detach straight pipe-to-tube adapter (Figure 2, Item 5) from rear panel.

EXTERNAL FUEL CONNECTION AND HOSE REPAIR - (CONTINUED)

Disassembly

1. External Fuel Hose
   a. Unscrew the half quick-disconnect coupling (Figure 1, Item 6) from the hose assembly (Figure 1, Item 4).
   b. Cut the protective dust plug (Figure 1, Item 3) and the protective dust cap (Figure 1, Item 5) away from the fuel hose, being careful not to cut the hose in the process.

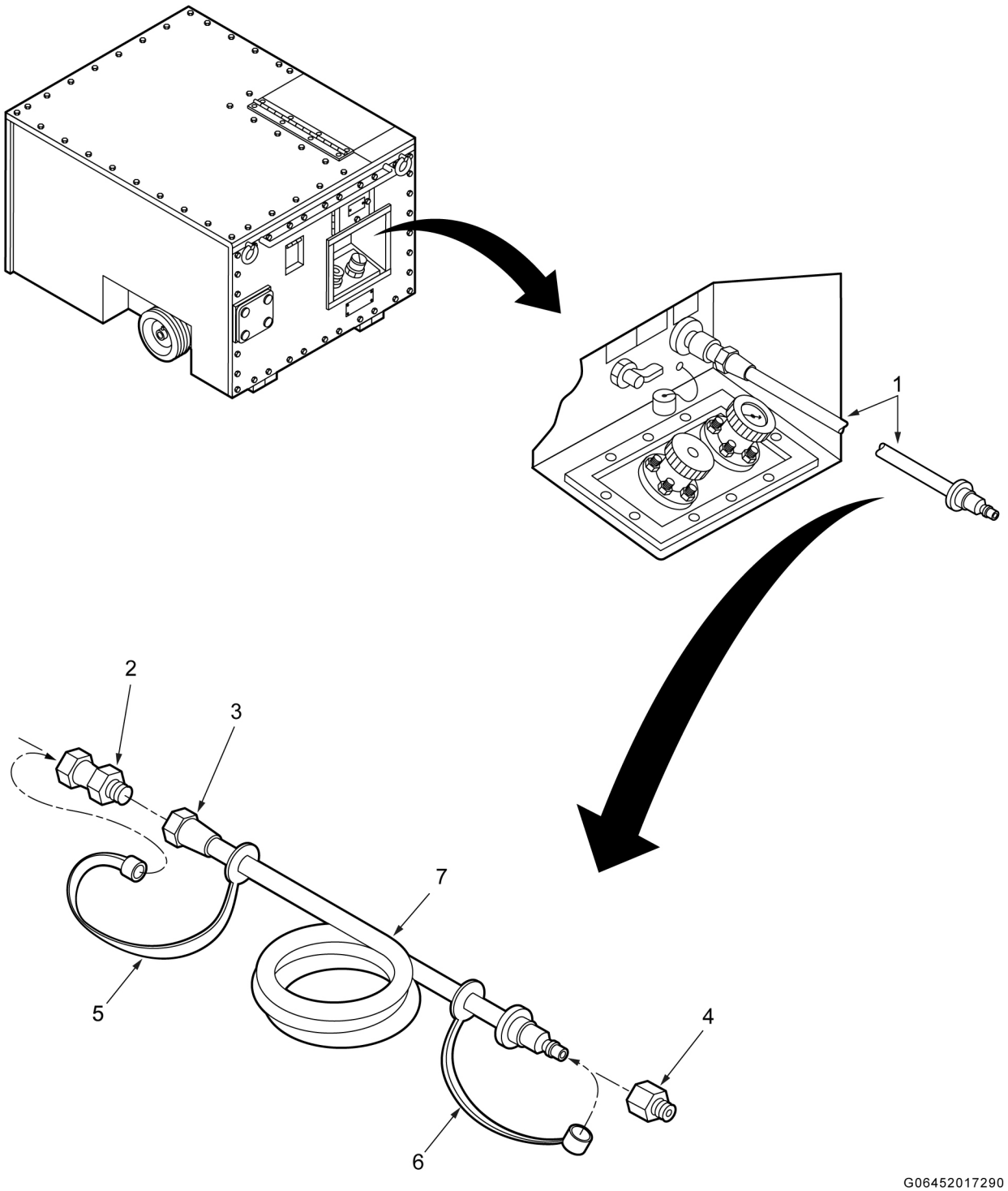


Figure 1. External Fuel Hose Removal, Disassembly, Assembly, and Installation.

EXTERNAL FUEL CONNECTION AND HOSE REPAIR - (CONTINUED)

2. External Fuel Connection
   a. Open the rear side door to access fuel lines and ASH rear panel (Figure 2, Item 1).
   b. Disconnect the U-shaped metal-tube fuel line (Figure 2, Item 2) from the straight pipe-to-tube adapter (Figure 2, Item 5).
   c. Loosen the U-shaped metal-tube fuel line at its connection to the fuel selector valve (Figure 2, Item 3).
   d. Remove retaining nut (Figure 2, Item 4) and detach straight pipe-to-tube adapter (Figure 2, Item 5) from rear panel.

Assembly

1. External Fuel Hose
   a. Carefully stretch the ring end of the replacement dust cap (Figure 1, Item 5) over the end of the hose (Figure 1, Item 4) with the straight pipe-to-tube adapter.
   b. Place the cap over the straight pipe-to-tube adapter.
   c. Carefully stretch the ring end of the replacement dust plug (Figure 1, Item 3) over the end of the hose where the half quick-disconnect coupling has been removed.
   d. Screw a replacement half quick disconnect coupling (Figure 1, Item 6) onto the fuel hose. Tighten.
   e. Insert the protective dust plug (Figure 1, Item 5) into the half quick-disconnect coupling.
2. External Fuel Connection
   a. Open the rear side door to access fuel lines and ASH rear panel (Figure 2, Item 1).
   b. Insert the threaded end of the straight pipe-to-tube adapter (Figure 2, Item 5) into the opening on the rear panel marked “EXTERNAL FUEL SUPPLY.”
   c. Install retaining nut (Figure 2, Item 4) and onto the straight pipe-to-tube adapter. Tighten.
   d. Connect the U-shaped metal-tube fuel line (Figure 2, Item 2) to the straight pipe-to-tube adapter (Figure 2, Item 5). Tighten the connection.

EXTERNAL FUEL CONNECTION AND HOSE REPAIR - (CONTINUED)

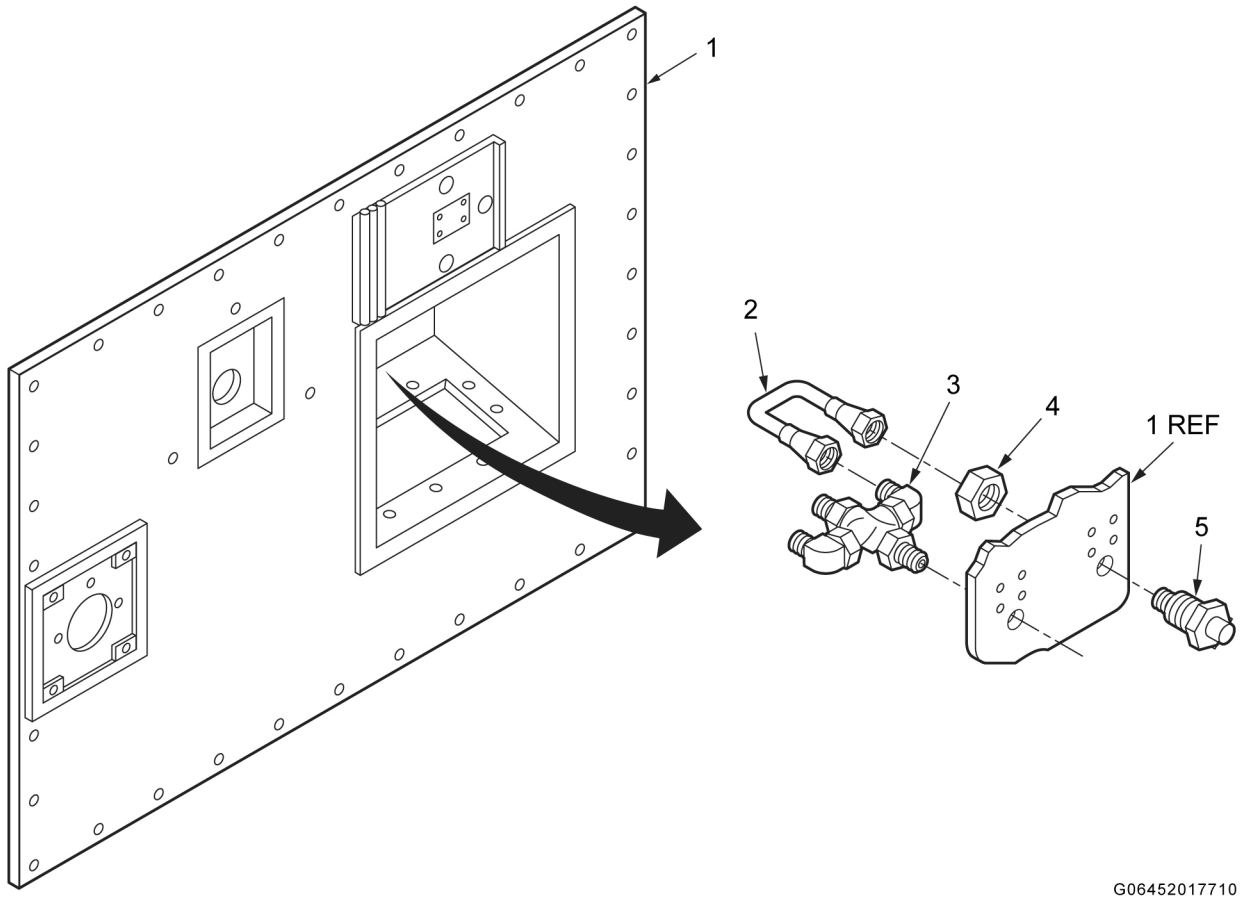


Figure 2. External Fuel Connection Removal, Disassembly, Assembly, and Installation.

Installation

1. External Fuel Connection
   a. Open the rear side door to access fuel lines and ASH rear panel (Figure 2, Item 1).
   b. Insert the threaded end of the straight pipe-to-tube adapter (Figure 2, Item 5) into the opening on the rear panel marked “EXTERNAL FUEL SUPPLY.”
   c. Install retaining nut (Figure 2, Item 4) and onto the straight pipe-to-tube adapter. Tighten.
   d. Connect the U-shaped metal-tube fuel line (Figure 2, Item 2) to the straight pipe-to-tube adapter (Figure 2, Item 5). Tighten the connection.
   e. Tighten the U-shaped metal-tube fuel line at its connection to the fuel selector valve (Figure 2, Item 3).
   f. Close the rear side door.
2. External Fuel Hose
   a. Connect the half quick-disconnect coupling (Figure 1, Item 6) to the external fuel coupling adapter by pulling back on the spring-loaded ring, pushing the couplings together, and releasing the ring.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL LINES ASSEMBLIES REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117Item 19)
Tool Set, SATS (WP 0113, Table 2. Item 8)

Materials/Parts
Fuel Line Assembly (, Figure 1)
Fuel Line Assembly (WP 0090, Figure 2)
Fuel Line Assembly (WP 0090, Figure 3)
Fuel Line Assembly (WP 0090, Figure 4)
Fuel Line Assembly (WP 0090, Figure 5)
Fuel Line Assembly (WP 0090, Figure 6)
Fuel Line Assembly (WP 0090, Figure 7)
Fuel Line Assembly (WP 0097, Figure 17)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1

Equipment Condition
ASH disconnected from power source
Top panel removed, WP 0019

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

FUEL LINES ASSEMBLIES REPAIR

Disassemble only to the level required to make repairs.
Repair is limited to replacement of defective parts.

Remove

Remove specific damaged fuel lines IAW the work packages concerning their separate assemblies: WP 0020, WP 0026, WP 0029, WP 0031, and WP 0032.

Prepare for Use

Manufacture specific replacements for damaged fuel lines IAW as listed in the initial setup. See WP 0097, Figure 17for help with orientation.

FUEL LINES ASSEMBLIES REPAIR - (CONTINUED)

Installation

Install specific manufactured fuel lines IAW the work packages concerning their separate assemblies (e.g., WP 0020, WP 0026, WP 0029, WP 0031, and WP 0032).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL TANK ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Drain Pan (Tool Set, SATS) (WP 0117, Item 3)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket (WP 0084, Figure 6)
Lockwasher (WP 0097, Figure 18, Item 2)
Lockwasher (WP 0097, Figure 19, Item 2)
Primer, Sealing Compound (WP 0116, Item 9)
O-ring (WP 0118, Item 28)
Sealing Compound (WP 0116, Item 12)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
FM 10-67-1

Equipment Condition
ASH disconnected from power source
Rear panel removed, WP 0020

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

FUEL TANK ASSEMBLY REPAIR

Disassemble only to the level required to make repairs. Repair is limited to replacement of defective parts.

Removal

WARNING

Use care when using the jack assembly or when raising or lowering the wheel assemblies. Fingers or hands may be pinched causing injury to personnel.

FUEL TANK ASSEMBLY REPAIR - (CONTINUED)

1. Extend jack assembly (Figure 1, Item 4), remove pin (Figure 1, Item 2) and place wheel assembly (Figure 1, Item 1) on each side of the ASH into the down position. Reinsert pins (Figure 1, Item 2) to lock wheel assemblies in place.
2. Retract jack assembly (Figure 1, Item 4) until front of ASH (Figure 1, Item 3) is resting on the ground.
3. Remove four screws (Figure 1, Item 8) four lockwashers (Figure 1, Item 7), four flat washers (Figure 1, Item 9), fuel drain cover (Figure 1, Item 6), and gasket (Figure 1, Item 5). Discard lockwashers and gasket.

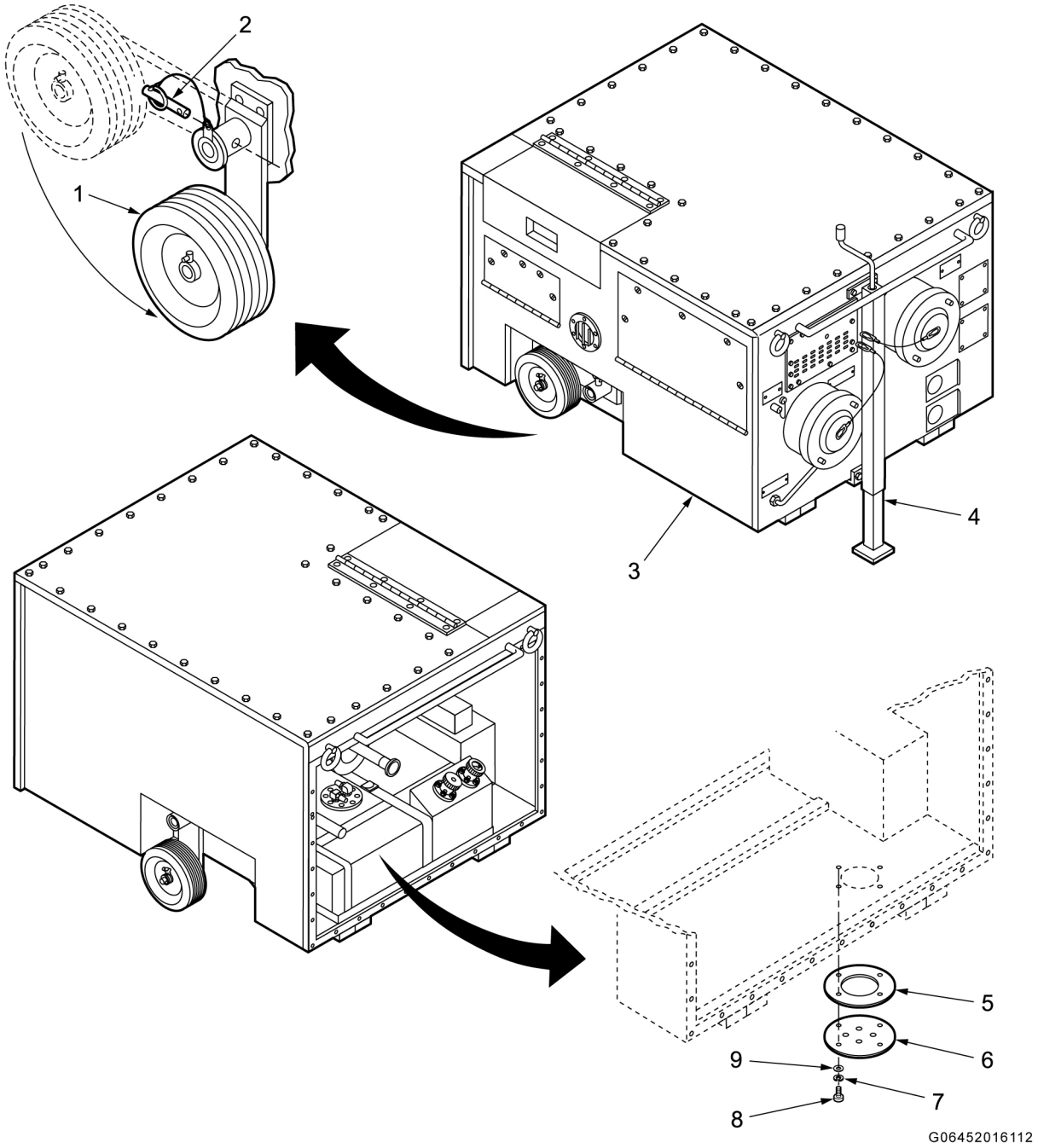


Figure 1. Fuel Tank Removal.

FUEL TANK ASSEMBLY REPAIR - (CONTINUED)

NOTE

Fuel tank holds 14 gallons. Maintainer may need to empty drain pan repeatedly to empty tank completely.

4. Position drain pan (Figure 2, Item 7) under fuel tank (Figure 2, Item 2).
5. Remove drain plug (Figure 2, Item 6).
6. Extend jack assembly (Figure 2, Item 1) in stages while emptying tank (Figure 2, Item 2), being careful not to overfill the drain pan at each stage, until unit is level and tank is empty.
7. When tank (Figure 2, Item 2) is empty, reinstall drain plug (Figure 2, Item 6).
8. Remove fuel lines (Figure 2, Item 3) and (Figure 2, Item 4) from portable fuel tank (Figure 2, Item 2).
9. Unfasten four straps (Figure 2, Item 8).
10. Lift portable fuel tank (Figure 2, Item 2) from tray (Figure 2, Item 5).
11. Remove eight screws (Figure 2, Item 11), eight lockwashers (Figure 2, Item 10), eight flat washers (Figure 2, Item 9), and fuel pan assembly(Figure 2, Item 5). Discard lockwashers.

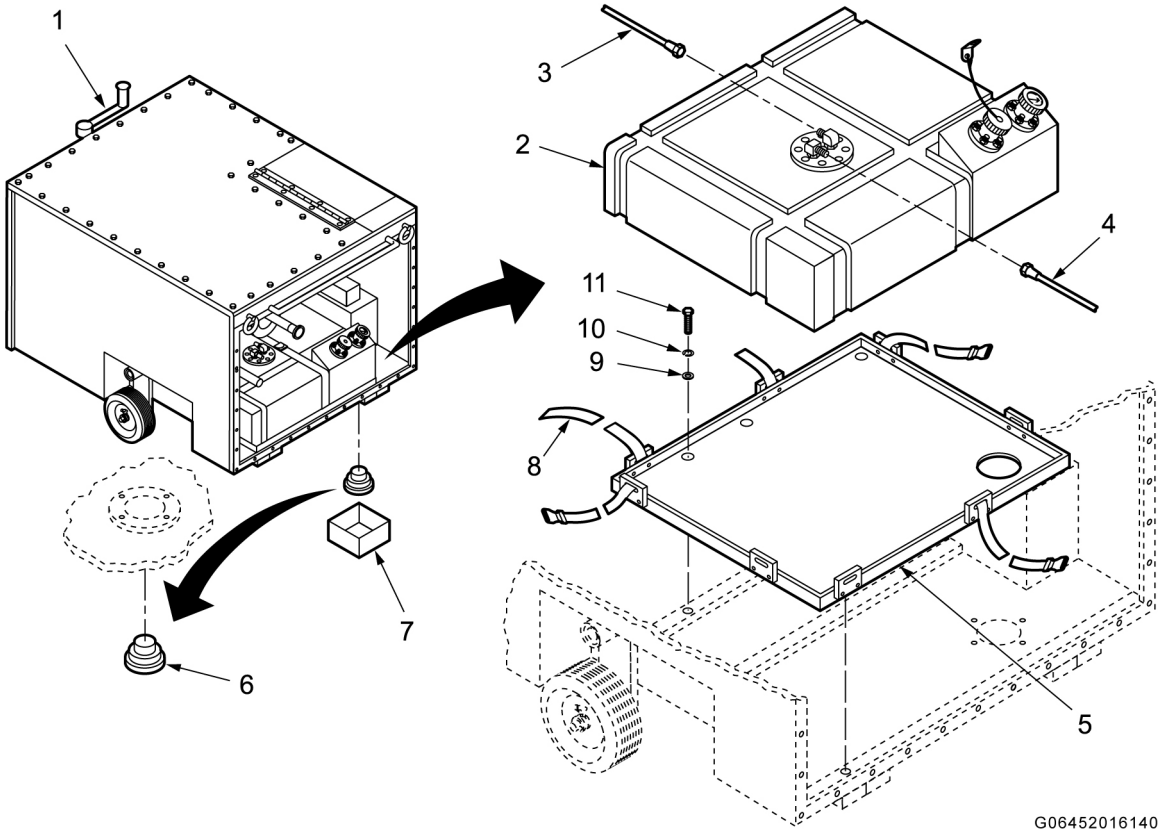


Figure 2. Fuel Tank Removal.

Disassembly

1. Remove two pipe-to-tube elbows (Figure 3, Item 2) and bushing (Figure 3, Item 3).
2. Remove eight screws (Figure 3, Item 1), eight lockwashers (Figure 3, Item 11), and mount plate (Figure 3, Item 12). Discard lockwashers.

FUEL TANK ASSEMBLY REPAIR - (CONTINUED)

3. Remove liquid level (fuel) gauge (Figure 3, Item 6), filler cap (Figure 3, Item 7), and fluid (fuel) filter element (Figure 3, Item 8).
4. Remove twelve nuts (Figure 3, Item 5), twelve lockwashers (Figure 3, Item 4), two filler neck rings (Figure 3, Item 9), and isolator (Figure 3, Item 10). Discard lockwashers.

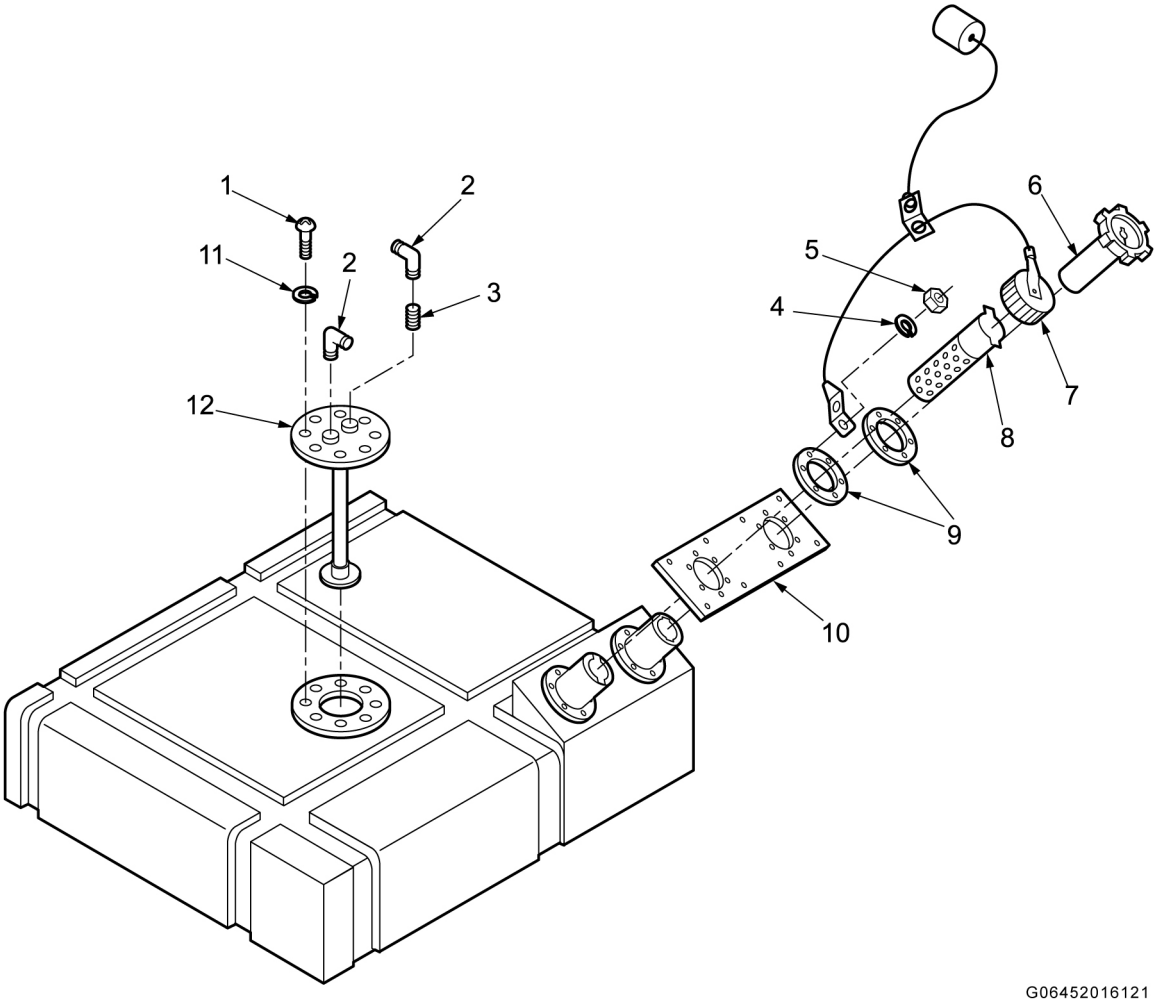


Figure 3. Fuel Tank Disassembly.

5. Remove twelve space adapters (Figure 4, Item 1), filler neck (Figure 4, Item 3) and fuel gauge neck (Figure 4, Item 2).
6. Remove drain plug (Figure 4, Item 9).
7. Remove four lock nuts (Figure 4, Item 8), four flat washers (Figure 4, Item 7) and washer ring (Figure 4, Item 6).
8. Remove drain port (Figure 4, Item 4) and O-ring (Figure 4, Item 5). Discard O-ring.

FUEL TANK ASSEMBLY REPAIR - (CONTINUED)

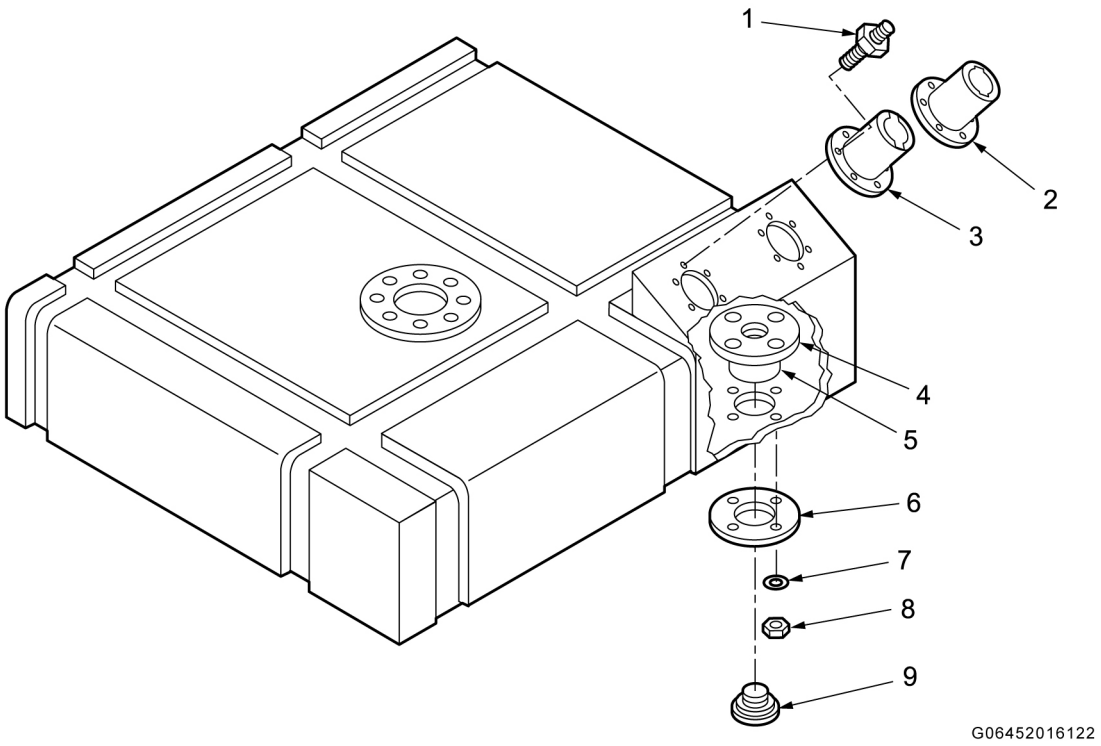


Figure 4. Fuel Tank Disassembly.

Assembly

1. Install drain port (Figure 4, Item 4) and O-ring (Figure 4, Item 5).
2. Apply a thin coat of sealant primer to washer ring (Figure 5, Item 6) and mounting surface on bottom of fuel tank around the drain port (Figure 5, Item 4).
3. Apply Sealant to washer ring (Figure 5, Item 6) and bottom mounting surface of fuel tank around the drain port (Figure 5, Item 4).
4. Install four flat washers (Figure 5, Item 7) and four lock nuts (Figure 5, Item 8).
5. Install drain plug (Figure 5, Item 9).
6. Apply a thin coat of sealant primer to bottom flange on fuel gauge neck (Figure 5, Item 2) and filler neck (Figure 5, Item 3).
7. Apply sealant to bottom flange on fuel gauge neck (Figure 5, Item 2) and filler neck (Figure 5, Item 3).
8. Install fuel gauge neck (Figure 5, Item 2), filler neck (Figure 5, Item 3) with twelve space adapters (Figure 5, Item 1).

FUEL TANK ASSEMBLY REPAIR - (CONTINUED)

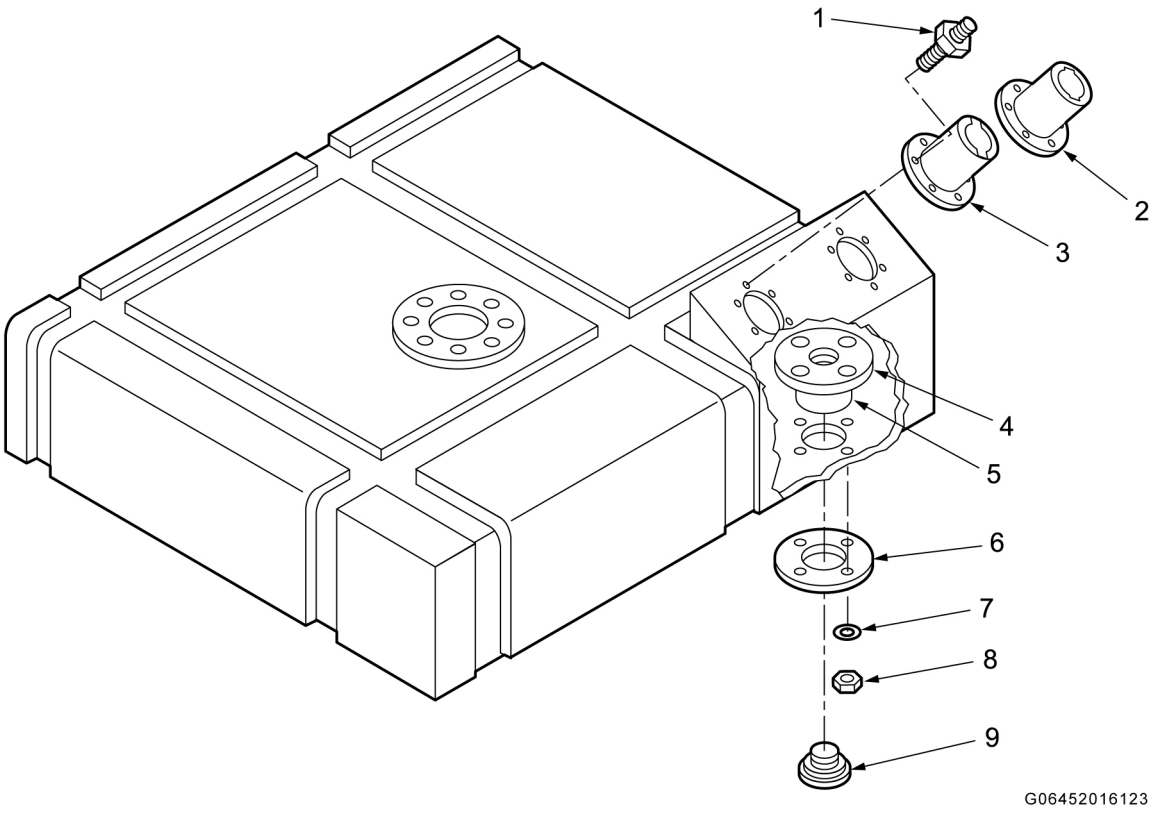


Figure 5. Fuel Tank Assembly.

9. Install isolator (Figure 6, Item 8) and two neck rings (Figure 6, Item 7).
10. Ensure dust cap (Figure 6, Item 3), lanyard is attached to the fuel cap (Figure 6, Item 5), cable. Install the loose end of the fuel cap cable (Figure 6, Item 5) onto the space adapter (Figure 5, Item 1) at the one o'clock position on the fuel filler neck (Figure 5, Item 3).
11. Secure the neck rings (Figure 6, Item 7) with twelve lockwashers (Figure 6, Item 12) and twelve nuts (Figure 6, Item 13).
12. Install fluid (fuel) filter element (Figure 6, Item 6), fuel cap (Figure 6, Item 5) and fuel gauge (Figure 6, Item 4).
13. Apply a thin coat of sealant primer to bottom outer edge of mount plate (Figure 6, Item 9).
14. Apply sealant to bottom outer edge of mount plate (Figure 6, Item 9).
15. Install mount plate (Figure 6, Item 9), eight lockwashers (Figure 6, Item 10) and eight screws (Figure 6, Item 1).
16. Install bushing (Figure 6, Item 11) and two elbows (Figure 6, Item 2). Be sure to screw the flat-shaped end of the elbows into the mount plate so that the cone-shaped end of the elbows is available to mate with the fuel lines later.

FUEL TANK ASSEMBLY REPAIR - (CONTINUED)

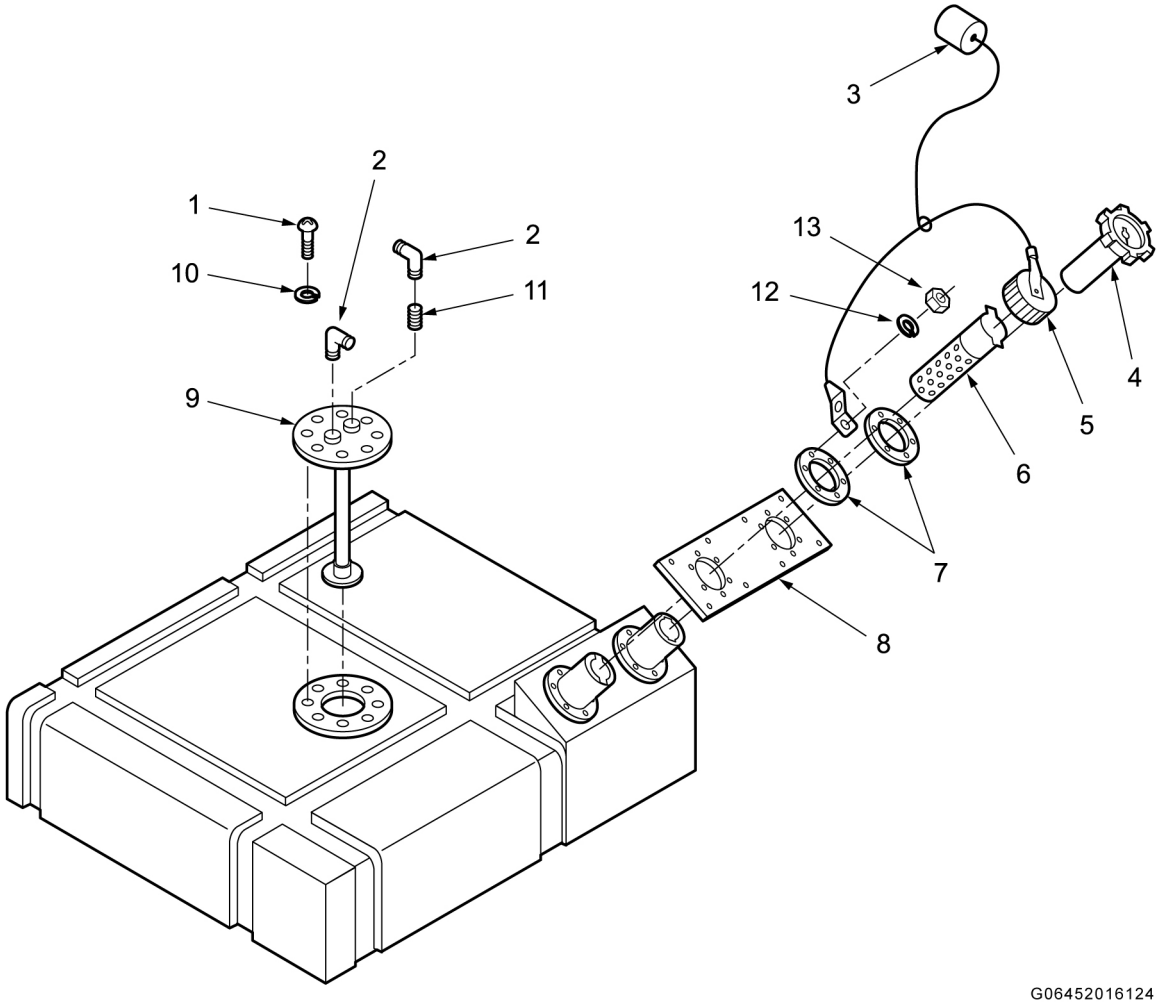


Figure 6. Fuel Tank Assembly.

Installation

1. Install tray (Figure 7, Item 4), eight flat washers (Figure 7, Item 10), eight lockwashers (Figure 7, Item 11) and eight screws (Figure 7, Item 12).
2. Install fuel tank (Figure 7, Item 13) on tray (Figure 7, Item 4) and fasten the four straps (Figure 7, Item 3).
3. Connect fuel lines (Figure 7, Item 1) and (Figure 7, Item 2) to fuel tank (Figure 7, Item 13).
4. Install gasket (Figure 7, Item 5), fuel drain cover (Figure 7, Item 6), four flat washers (Figure 7, Item 9), four lockwashers (Figure 7, Item 7) and four screws (Figure 7, Item 8).

FUEL TANK ASSEMBLY REPAIR - (CONTINUED)

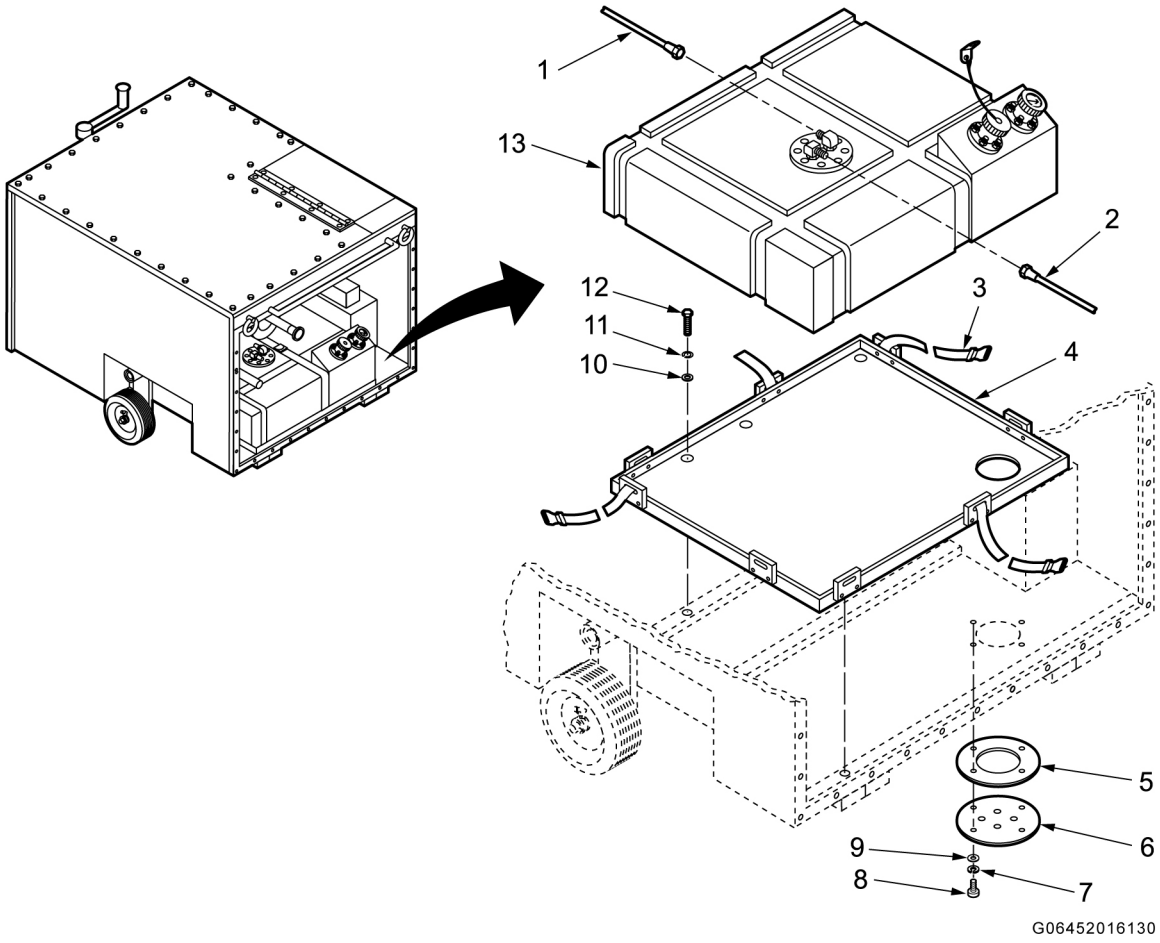


Figure 7. Fuel Tank Installation.

5. Reinstall ASH rear panel (WP 0020).
6. Extend the jack (Figure 8, Item 4) until the wheel assemblies (Figure 8, Item 1) are off the ground.
7. Remove pins (Figure 8, Item 2), rotate the wheel assemblies into their stowed position, and lock them in place by reinstalling the pins.
8. Retract the jack assembly until the ASH (Figure 8, Item 3) is resting on the ground.

FUEL TANK ASSEMBLY REPAIR - (CONTINUED)

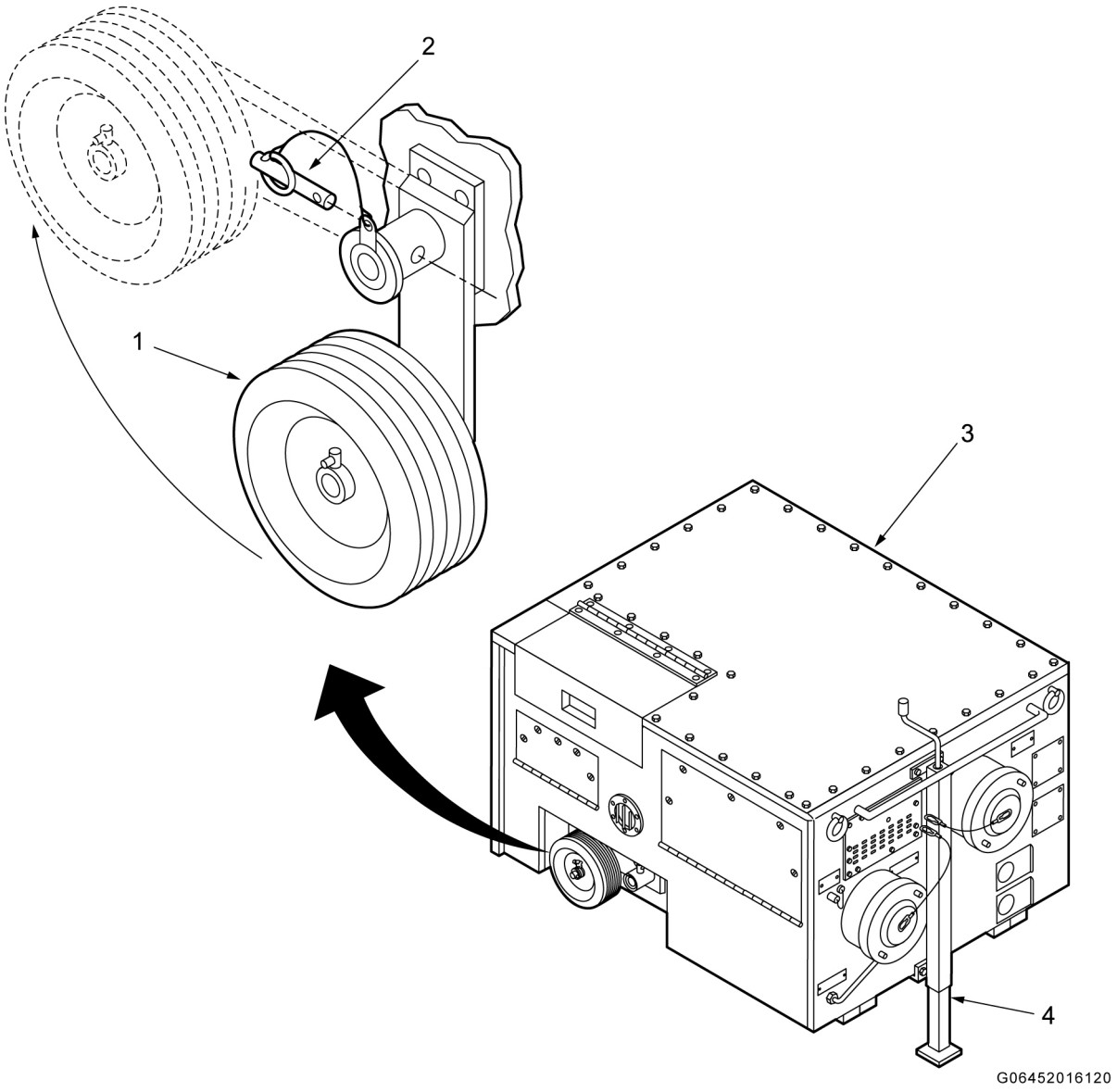


Figure 8. Fuel Tank Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT

INITIAL SETUP:

Tools and Special Tools
Soft-faced Vise (Tool Set, SATS) (WP 0117, Item 16)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Cotter Pin (WP 0098, Figure 23, Item 3)
Lockwasher (WP 0098, Figure 23, Item 2)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References

Equipment Condition
ASH disconnected from power source
Top Panel removed, WP 0019

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT

Disassemble only to the level required to make repairs. Repair is limited to replacement of defective parts.

Removal

1. Open rear side door (Figure 1, Item 3) and front side door (Figure 1, Item 4).
2. Disconnect the metal tube assemblies (fuel lines) as follows:
   a. Burner feed line (Figure 1, Item 5) from pump.
   b. Supply line (Figure 1, Item 6) from inlet side of the fluid (fuel) filter.
   c. Pressure-gauge line (Figure 1, Item 7) from the tee on the primary bypass line.
   d. Purge line (Figure 1, Item 8) from the 3-way solenoid valve.
3. Tag and disconnect wire (Figure 1, Item 12) TB3-9/L1-BLK from TB3 (Figure 1, Item 2) terminal 9. Reinstall the other wires at that terminal.
4. Tag and disconnect the following wires from TB1 (Figure 1, Item 1); reinstall any other wires present at each terminal:
   a. Wire (Figure 1, Item 11), TB1-7/L1-BLK from terminal 7 .
   b. Wire (Figure 1, Item 10) TB1-9 /L2-BLKfrom terminal 9.
   c. Wire (Figure 1, Item 9) TB1-4/L2-BLK from terminal 4.

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT - (CONTINUED)

5. Remove tie-down strap (Figure 1, Item 13) and similar ones as required to free the solenoid wires (L1 and L2) for removal.
6. Slide wires (Figure 1, Item 9), (Figure 1, Item 10), (Figure 1, Item 11), and (Figure 1, Item 12) out through clamp (Figure 1, Item 16).
7. Remove two screws (Figure 1, Item 14), two lockwashers (Figure 1, Item 13) and pump assembly (Figure 1, Item 15) from the AC pump motor. Discard lockwashers.

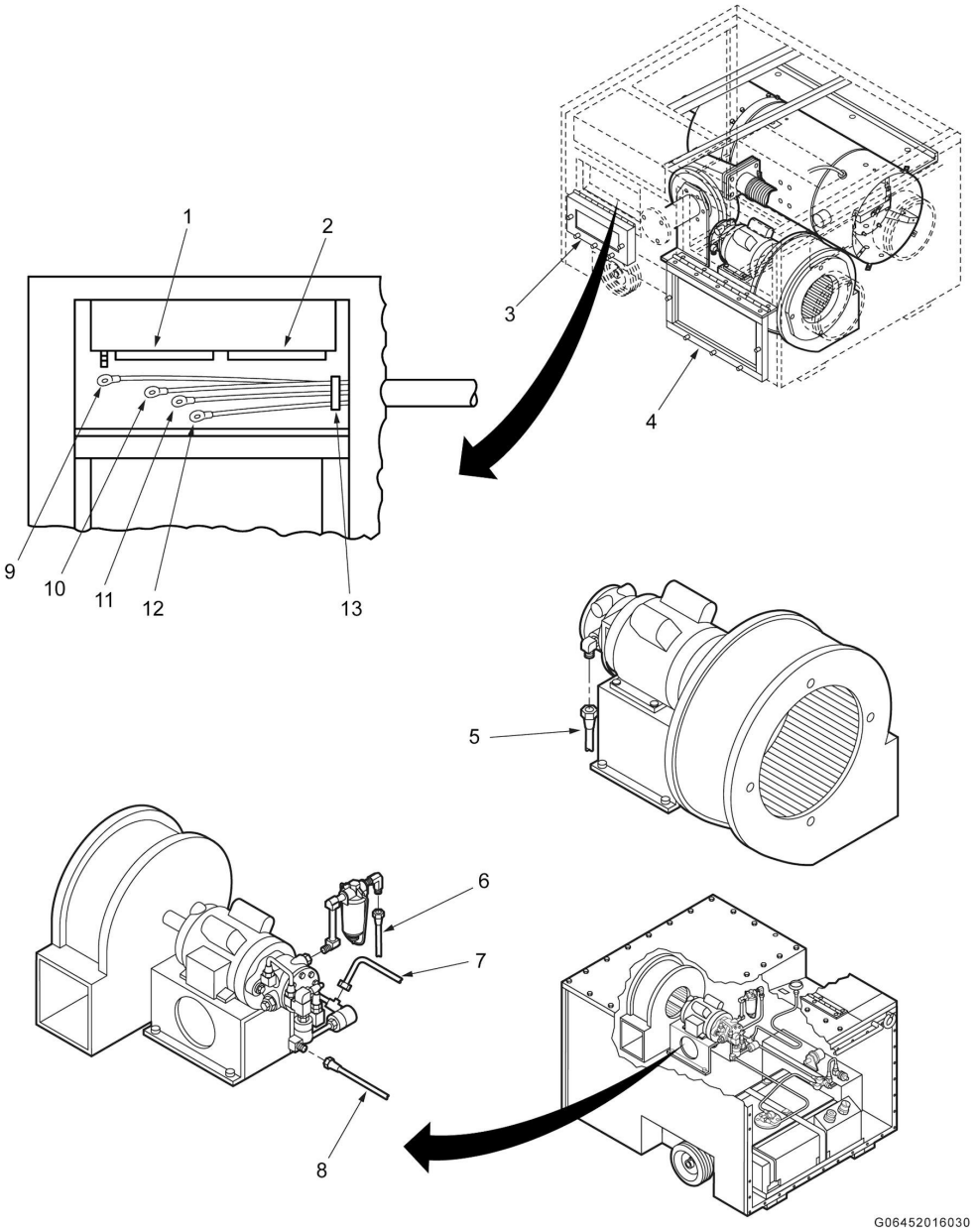


Figure 1. Fuel Pump Removal (Sheet 1 of 2).

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT - (CONTINUED)

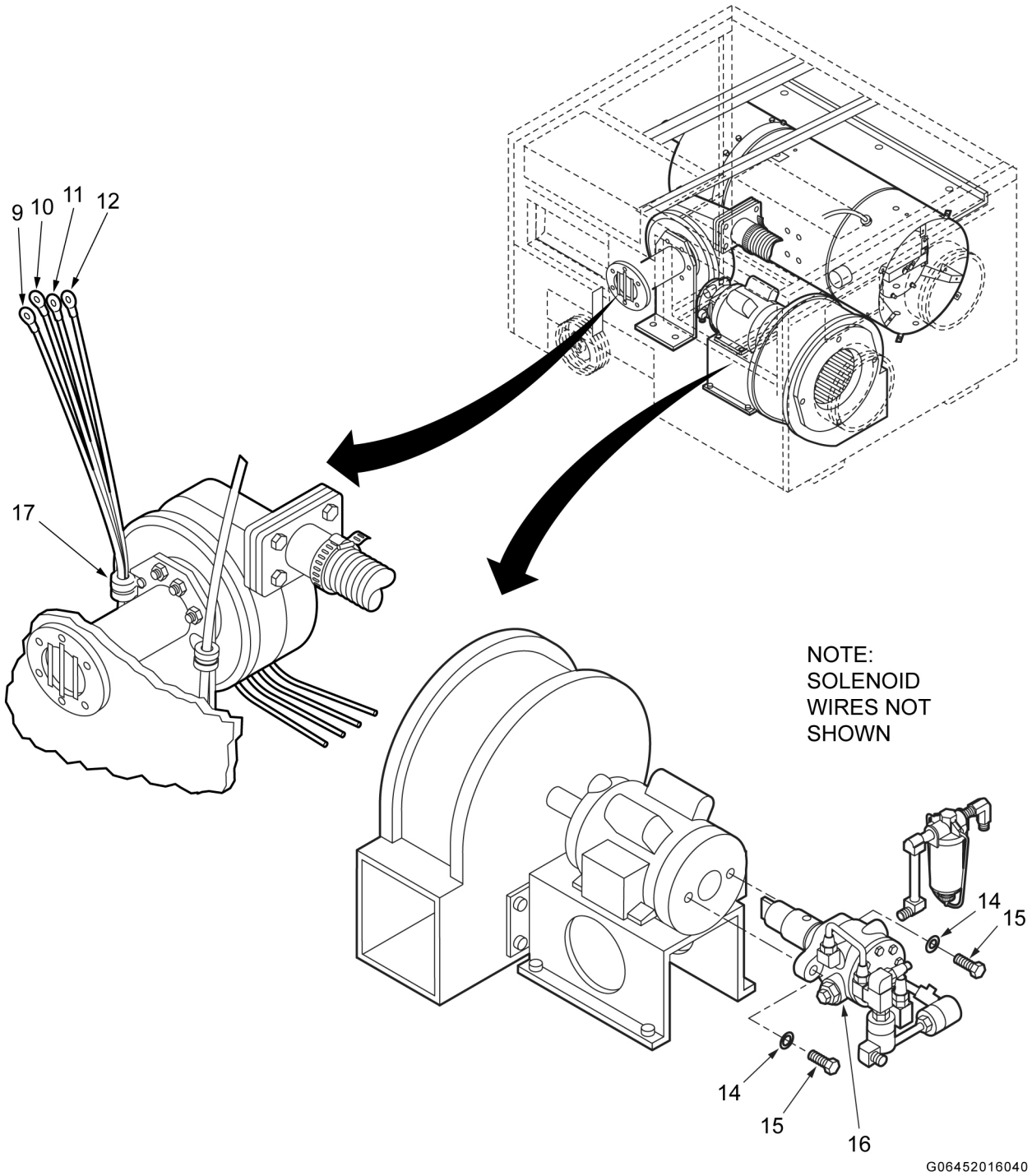


Figure 1. Fuel Pump Removal (Sheet 2 of 2).

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT - (CONTINUED)

Disassembly

1. Remove cotter pin (Figure 2, Item 5), spring pin (Figure 2, Item 6) and rigid shaft coupling (Figure 2, Item 7). Discard cotter pin.
2. Place pump (Figure 2, Item 8) into a soft-faced vise.
3. Remove metal tubing assembly (Figure 2, Item 28), straight connector (Figure 2, Item 26) and elbow (Figure 2, Item 27).
4. Remove metal tubing assembly (Figure 2, Item 17), straight connectors (Figure 2, Item 30) and (Figure 2, Item 32), and pipe-to-tube elbows (Figure 2, Item 29) and (Figure 2, Item 31).
5. Remove tee (Figure 2, Item 25), straight connector (Figure 2, Item 24) and pipe-to-tube elbow (Figure 2, Item 22).
6. Loosen adapter port (Figure 2, Item 20) on outlet side of solenoid valve (Figure 2, Item 18).
7. Remove 3-way solenoid valve (Figure 2, Item 23), nipple (Figure 2, Item 21), adapter port (Figure 2, Item 20) and O-ring (Figure 2, Item 19). Not all examples of the ASH include an O-ring in this location. Discard O-ring.
8. Remove adapter port (Figure 2, Item 20) and nipple (Figure 2, Item 21) from 3-way solenoid valve (Figure 2, Item 23). Install adapter port (Figure 2, Item 20) on solenoid valve (Figure 2, Item 18), hand tighten only.
9. Remove solenoid valve (Figure 2, Item 18), bushing (Figure 2, Item 16), tee (Figure 2, Item 15) and nipple (Figure 2, Item 14).
10. Loosen retainer nut (Figure 2, Item 4) to remove fluid (fuel) filter bowl (Figure 2, Item 1), gasket (Figure 2, Item 2) and filter (Figure 2, Item 3).
11. Remove elbow (Figure 2, Item 9), filter housing (Figure 2, Item 10), elbow (Figure 2, Item 11), nipple (Figure 2, Item 12), and elbow (Figure 2, Item 13).
12. Remove pump (Figure 2, Item 8) from vise.

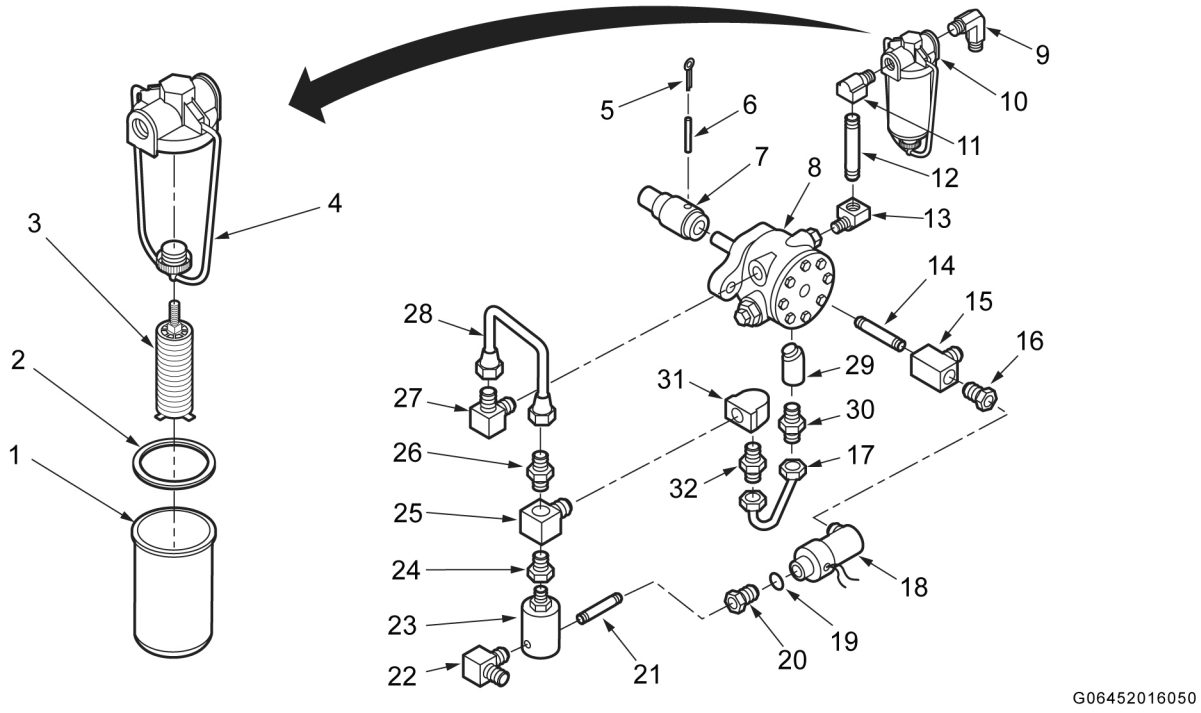


Figure 2. Fuel Pump and Solenoid Valves Assembly/Disassembly.

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT - (CONTINUED)

Assembly

NOTE

Elbows, tees, and straight connectors that are to be connected to fuel lines must have cone-shaped ends available to match the flared ends of the tubing. It is possible to install elbows on the pump incorrectly, which will only be discovered after the pump has been installed and the maintainer finds it impossible to connect lines to the pump. Be vigilant and save time.

1. Place pump (Figure 2, Item 8) in soft-faced vise.
2. Fluid (Fuel) Filter Assembly
   a. Install tube-to-pipe elbows (Figure 2, Item 13) and (Figure 2, Item 11) onto nipple (Figure 2, Item 12).
   b. Install the elbow/nipple assembly onto the outlet side of the filter housing (Figure 2, Item 10), then install another tube-to-pipe elbow (Figure 2, Item 9) to the inlet side of the filter housing.
   c. Install filter (Figure 2, Item 3), filter gasket (Figure 2, Item 2), filter bowl (Figure 2, Item 1) and tighten retainer nut (Figure 2, Item 4).
3. Solenoid Valve Assemblies
   a. Screw together nipple (Figure 2, Item 14), tee (Figure 2, Item 15), and bushing (Figure 2, Item 16). Tighten the assembly.
   b. Screw solenoid valve (Figure 2, Item 18) onto the bushing until the valve is tight and the open ports of the tee and the valve are 180 degrees apart.
   c. Remove adapter port (Figure 2, Item 20) from solenoid valve (Figure 2, Item 18).
   d. Install adapter port onto nipple (Figure 2, Item 21) and the nipple onto three-way solenoid valve (Figure 2, Item 23). Tighten the assembly.
   e. Install O-ring (Figure 2, Item 19), if required, and adapter port (Figure 2, Item 20) onto solenoid valve (Figure 2, Item 18). Tighten the assembly, making sure that the three-way valve is in the vertical position with respect to the solenoid valve and with its open port pointing upward as shown.
   f. Install pipe-to-tube elbow (Figure 2, Item 22), straight connector (Figure 2, Item 24), and tee (Figure 2, Item 25) onto three-way solenoid valve.
   g. Screw pipe-to-tube elbow (Figure 2, Item 31) and straight connector (Figure 2, Item 26) onto the tee and then a second straight connector (Figure 2, Item 32) to the elbow (Figure 2, Item 31). Tighten the assembly, making sure that the open port of the second elbow is parallel to the three-way valve and pointing downward.
   h. Screw a 45-degree pipe-to-tube elbow (Figure 2, Item 29) onto the secondary bypass port on the lower left front of the pump (Figure 2, Item 8), then screw a straight connector (Figure 2, Item 30) onto the 45-degree elbow. Tighten the assembly, making sure that the straight connector is horizontal and pointing outward from the pump's center.
   i. Screw a pipe-to-tube elbow (Figure 2, Item 27) onto the upper left intake port on the pump (Figure 2, Item 8) and tighten, ending with the free end in the vertical position.
4. Metal Tube Assemblies (Fuel Lines)
   a. If necessary, fabricate replacement fuel lines in accordance with , Figures 23–29.
   b. Install tube assembly (Figure 2, Item 17) onto straight connectors (Figure 2, Item 32) and (Figure 2, Item 30). Tighten the connections.
   c. Install tube assembly (Figure 2, Item 28) onto straight connector (Figure 2, Item 26) and elbow (Figure 2, Item 27). Tighten the connections.
5. Remove pump (Figure 2, Item 8) from vise.
6. Install rigid shaft coupling (Figure 2, Item 7), spring pin (Figure 2, Item 6) and cotter pin (Figure 2, Item 5).

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT - (CONTINUED)

Installation

1. Align rigid shaft coupling (Figure 3, Item 6) with slot in AC pump motor (Figure 3, Item 5) and insert.
2. Install pump (Figure 3, Item 7), with two lockwashers (Figure 3, Item 9) and two screws (Figure 3, Item 8) onto the end of the motor.
3. Route wires (Figure 3, Item 1), (Figure 3, Item 2), (Figure 3, Item 3), and (Figure 3, Item 4) under combustion fan inlet and up through clamp (Figure 3, Item 10).
4. Connect wires to TB1 (Figure 4, Item 1) as follows:
   a. Wire (Figure 4, Item 9), TB1-4/L2-BLK to terminal 4.
   b. Wire (Figure 4, Item 11) TB1-9/L2-BLK to terminal 9.
   c. Wire (Figure 4, Item 10) TB1-7/L1-BLK to terminal 7.
5. Connect wire (Figure 4, Item 12) TB3-9/L1-BLK to terminal 9 on TB3 (Figure 4, Item 2).
6. Install tie-down straps (Figure 4, Item 13) as required.
7. Manufacture replacement metal tube assemblies (fuel lines), if needed, following instructions in WP 0095, Figures 40 to 42.
8. Connect metal tube assembly (burner feed line) (Figure 4, Item 5) to the high-pressure output connection on the fuel pump.
9. Connect metal-tube assembly (Figure 4, Item 6) to input side of fuel filter.
10. Connect tube (Figure 4, Item 7) from fuel-pressure gauge to the tee between the pump and the solenoid valve.
11. Connect the fuel-purge tube (Figure 4, Item 8) to the three-way solenoid valve.
12. Close rear side door (Figure 4, Item 3) and front side door (Figure 4, Item 4).

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT - (CONTINUED)

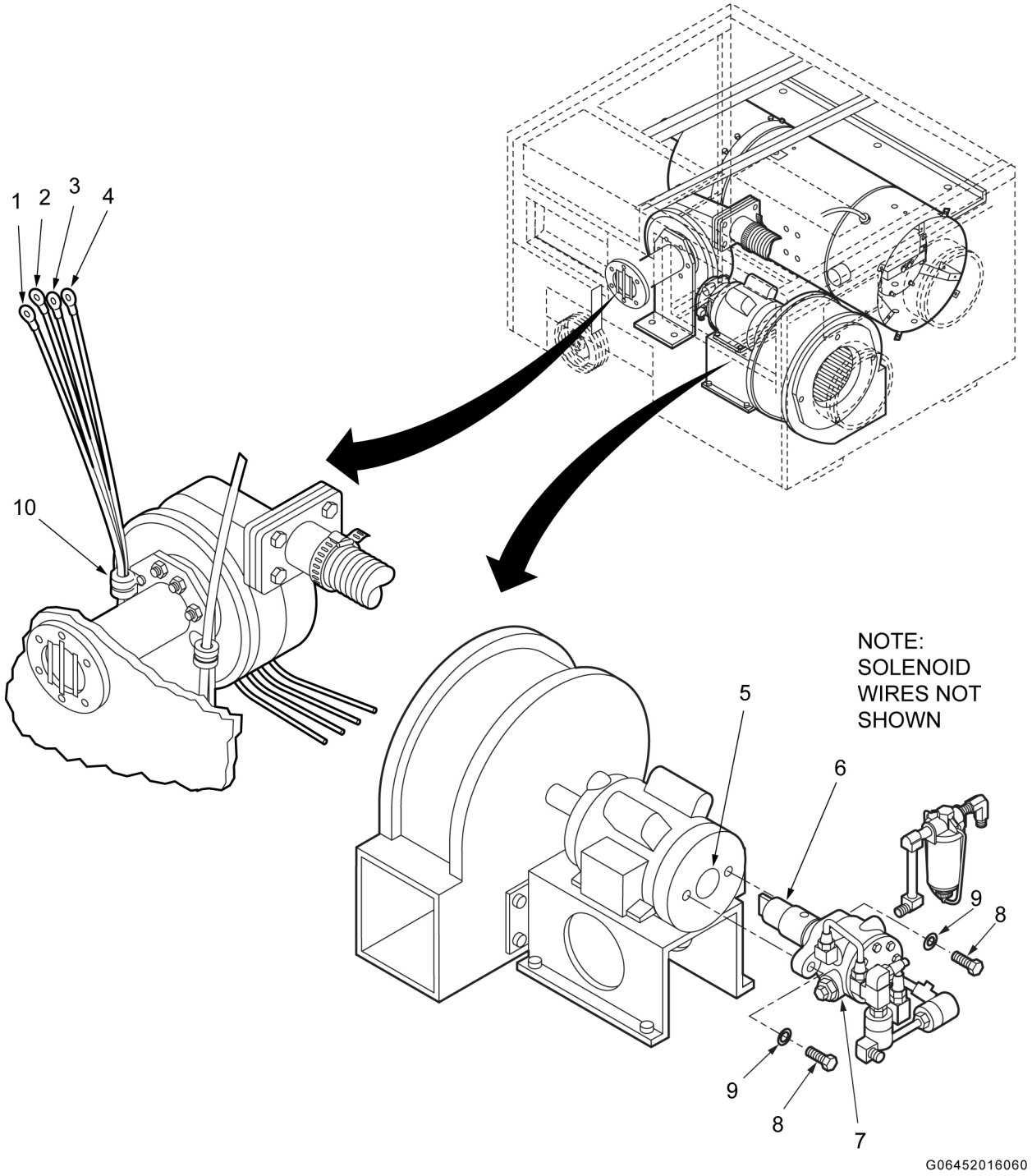


Figure 3. Fuel Pump and Solenoid Valves Installation.

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT - (CONTINUED)

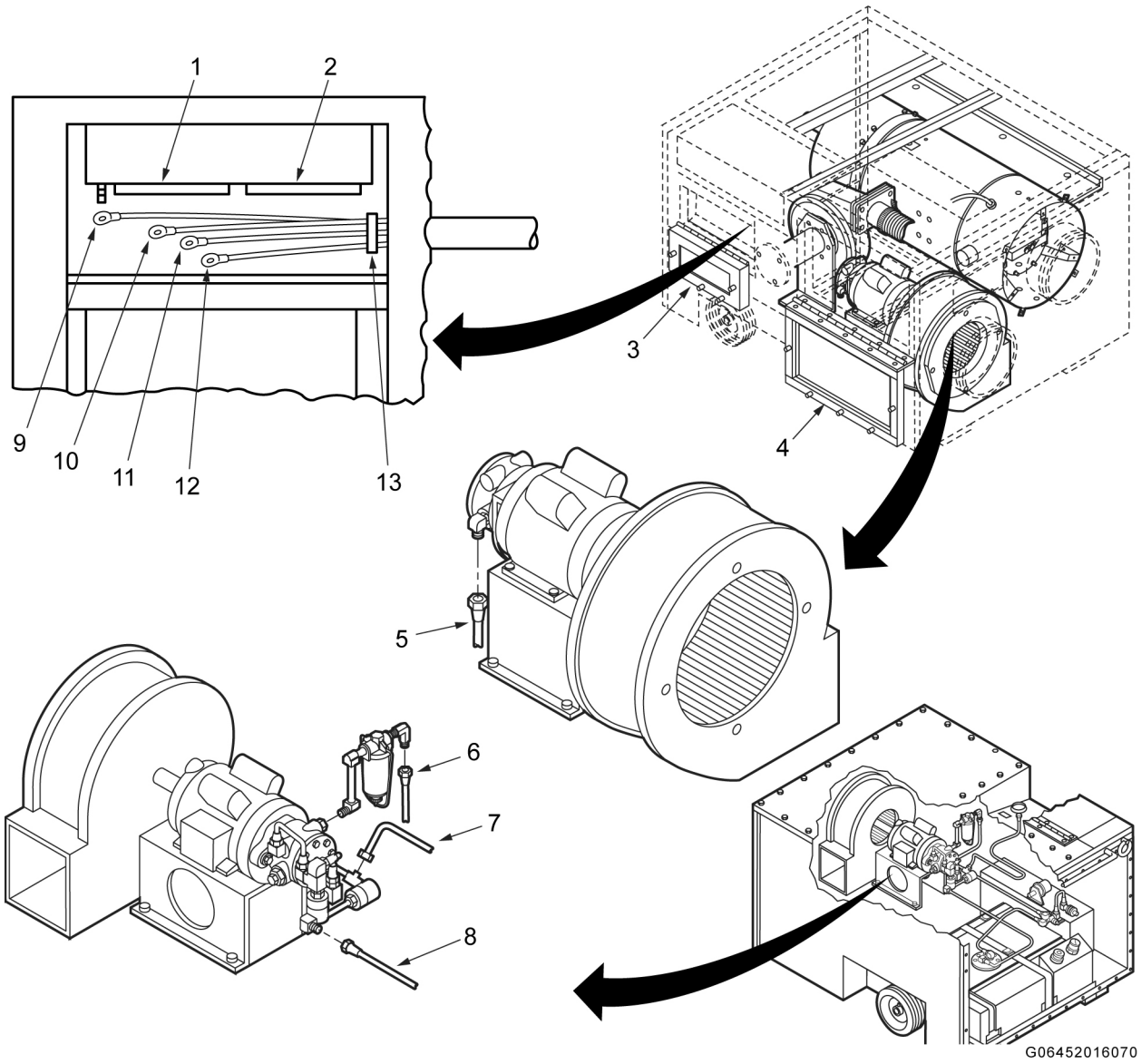


Figure 4. Fuel Pump and Solenoid Valves Installation.

Adjustment

1. Open side front door (Figure 5, Item 4).
2. Remove the small acorn nut (Figure 5, Item 3) from the far side of pump (Figure 5, Item 1) (opposite the burner feed line connection) to expose the adjustment screw (Figure 5, Item 2).
3. Turn the adjustment screw clockwise (inward) to increase pump pressure and counterclockwise (outward) to decrease pump pressure.
4. Reinstall acorn nut (Figure 5, Item 3) and close door (Figure 5, Item 4).
5. Operate the ASH IAW WP 0005; check the fuel pressure against WP 0002, Table 3.
6. If additional adjustment is necessary, repeat Steps 1 through 5.

FUEL PUMP AND SOLENOID VALVES REPAIR AND ADJUSTMENT - (CONTINUED)

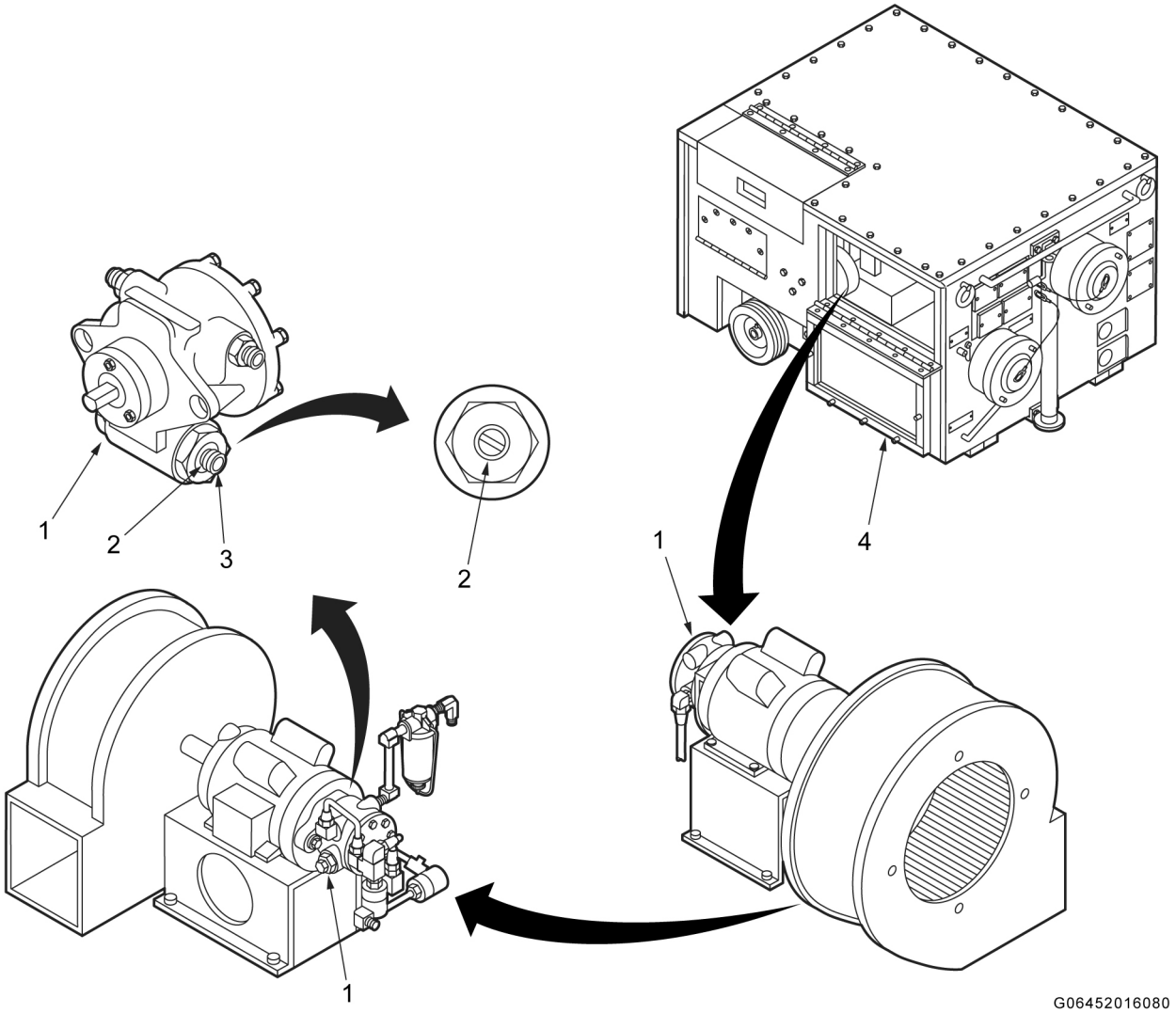


Figure 5. Fuel Pump Adjustment.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwashers (WP 0098, Figure 22, Item 3)
Nut and Bolt Retainer (WP 0098, Figure 22, Item 5)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (2)

Equipment Condition
ASH disconnected from power source
Circulating air fan and motor removed, WP 0033
Fuel pump and solenoid valves removed, WP 0032
Top panel removed, WP 0019

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance.

NOTE

Disassemble only to the level required to make repairs.

CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY REPAIR

Repair is limited to replacement of damaged parts.

Removal

1. Open front side door (Figure 1, Item 1).
2. Remove four nuts (Figure 1, Item 4). four lockwashers (Figure 1, Item 5), eight flat washers (Figure 1, Item 6), and four machine bolts (Figure 1, Item 10). Discard lockwashers.
3. Remove four screws (Figure 1, Item 9), four lockwashers (Figure 1, Item 8) and four flat washers (Figure 1, Item 7). Discard lockwashers.
4. Remove motor base (Figure 1, Item 11) and centrifugal fan housing (Figure 1, Item 3).

Inspection

1. Inspect all parts for wear and cracks.
2. Inspect all hardware for stripped or damaged threads.

Installation

1. Place motor base (Figure 1, Item 11) in bottom of frame (Figure 1, Item 2), align centrifugal fan housing (Figure 1, Item 3) with motor base and secure with four flat washers (Figure 1, Item 7), four lockwashers (Figure 1, Item 8) and four screws (Figure 1, Item 9).
2. Align the motor base (Figure 1, Item 11) with the mounting holes in bottom of frame (Figure 1, Item 2).
3. Install eight flat washers (Figure 1, Item 6), four machine bolts (Figure 1, Item 10), four lockwashers (Figure 1, Item 5) and four nuts (Figure 1, Item 4) in motor base (Figure 1, Item 11) and frame (Figure 1, Item 2). Hand tighten only.
4. Install circulating air fan and motor IAW WP 0033.
5. Install fuel pump and solenoid valves IAW WP 0032.

CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY REPAIR - (CONTINUED)

6. Tighten hardware installed in Step 3.
7. Close front side door (Figure 1, Item 1).

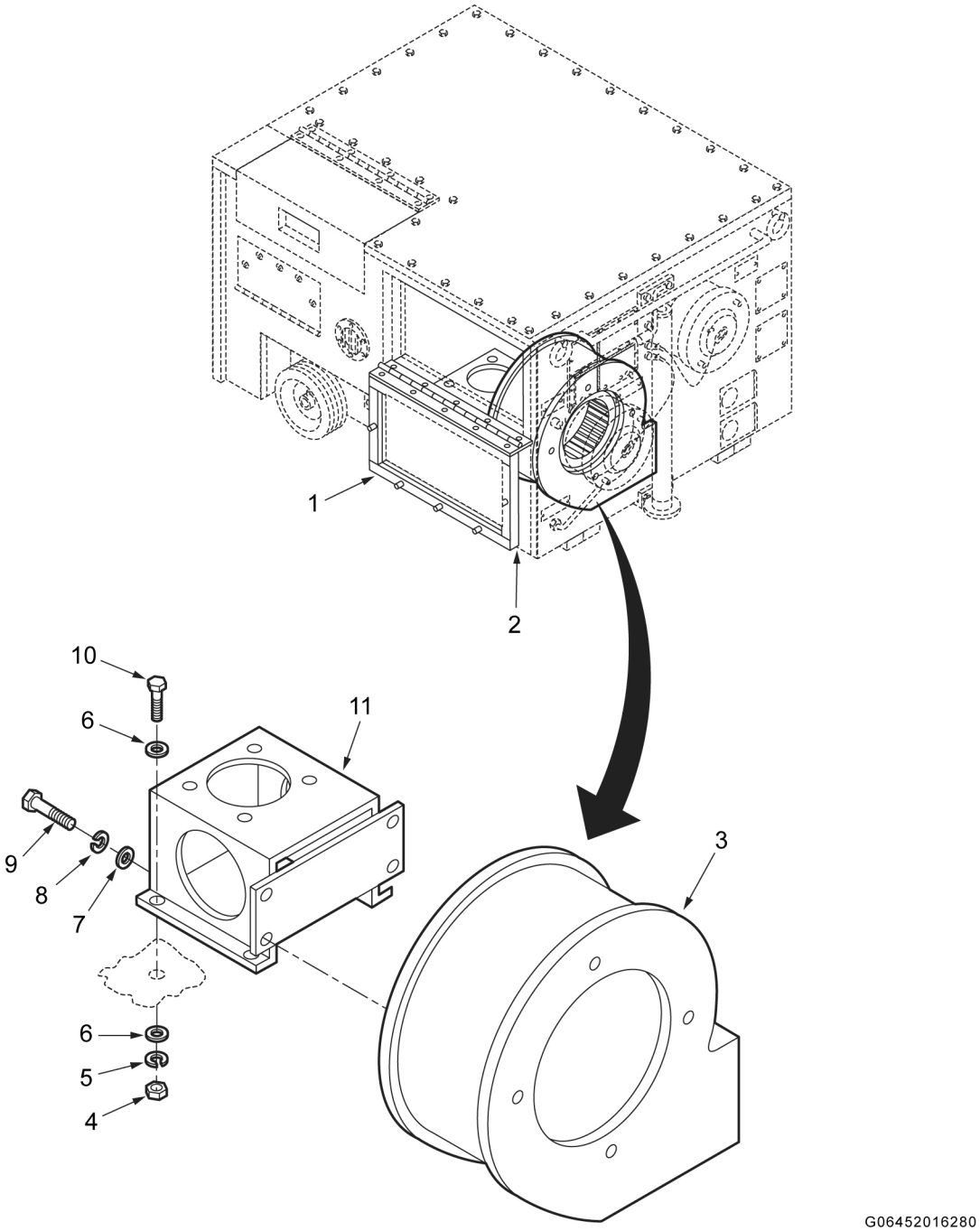


Figure 1. Circulating Air Fan/Pump/Motor Assembly Removal.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket (WP 0084, Figure 8)
Gasket (WP 0084, Figure 9)
Lockwasher (WP 0099, Figure 24, Item 4)
Lockwasher (WP 0099, Figure 24, Item 10)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Top panel removed, WP 0019

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR

Removal

1. Open the right-side rear door (Figure 1, Item 1) and larger, right-side front door (Figure 1, Item 2) on the ASH.
2. Remove the air inlet cover (Figure 1, Item 9) from the fan inlet guard (Figure 1, Item 12).
3. Remove the six nuts (Figure 1, Item 13), six lockwashers (Figure 1, Item 14), twelve flat washers (Figure 1, Item 11), and six bolts (Figure 1, Item 10) that attach the air inlet cover (Figure 1, Item 9) and

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR - (CONTINUED)

fan guard (Figure 1, Item 12) to the frame and the air inlet of the combustion fan assembly (Figure 1, Item 3). Discard the lockwashers.

4. With the removal of these fasteners, the air inlet cover (Figure 1, Item 9) and fan guard (Figure 1, Item 12) are free to be removed from the frame and air inlet of the combustion fan assembly (Figure 1, Item 3).
5. Remove the two nuts (Figure 1, Item 8), two lockwashers (Figure 1, Item 7) and two flat washers (Figure 1, Item 6) from the studs at the 3 and 9 o'clock positions on the fan mount bracket (Figure 1, Item 17). Discard the lockwashers.
6. Remove the clamp (Figure 1, Item 16), wire bundle (Figure 1, Item 15), clamp (Figure 1, Item 4), and fuel line (Figure 1, Item 5) from the studs at the 3 and 9 o'clock positions on the fan mount bracket (Figure 1, Item 17).
7. Tag and disconnect the black wire (Figure 1, Item 32) from TM1-11, the white wire (Figure 1, Item 33) from TB1-5, and the green wire (Figure 1, Item 34) from the ground stud (Figure 1, Item 35) on the control box (Figure 1, Item 18). Reconnect remaining wires. Cut wire tie-down straps (Figure 1, Item 20), as required.
8. Remove the wire tie-down straps (Figure 1, Item 22) and wire bundle (Figure 1, Item 21) from the duct (Figure 1, Item 23).
9. Loosen the two clamps (Figure 1, Item 24) and remove the duct (Figure 1, Item 23) and clamps from the outlet of the combustion fan assembly (Figure 1, Item 3).
10. Remove two nuts (Figure 1, Item 28), two lockwashers (Figure 1, Item 29), four flat washers (Figure 1, Item 27), ground wire (Figure 1, Item 26), and two bolts (Figure 1, Item 25) from the foot of the fan mount bracket (Figure 1, Item 17). Discard the lockwashers.
11. Remove the combustion fan assembly (Figure 1, Item 3).
12. Remove the gasket (Figure 1, Item 30) from the air inlet (Figure 1, Item 31) of the combustion fan assembly (Figure 1, Item 3). Discard the gasket.

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR - (CONTINUED)

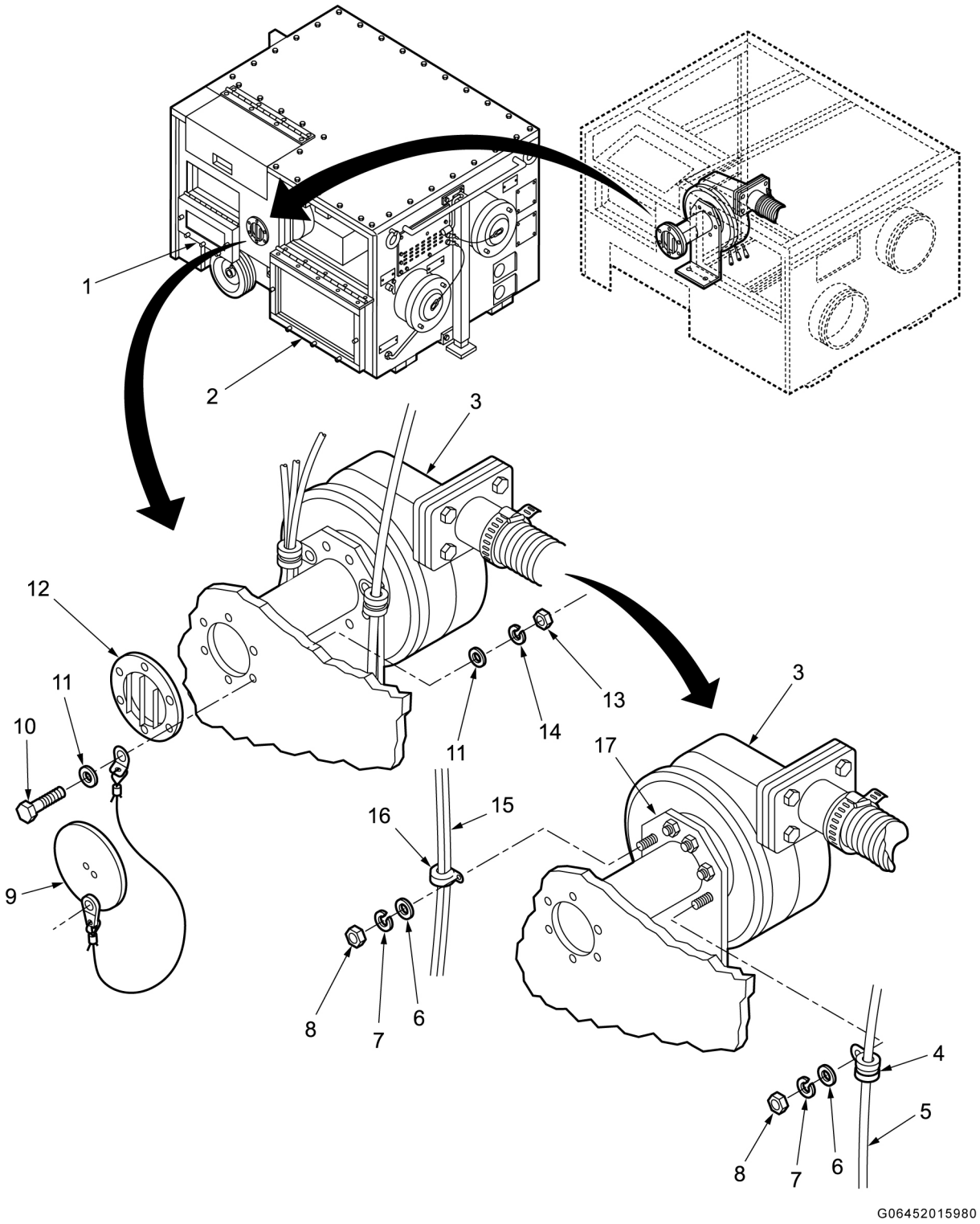


Figure 1. Combustion Fan Removal (Sheet 1 of 2).

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR - (CONTINUED)

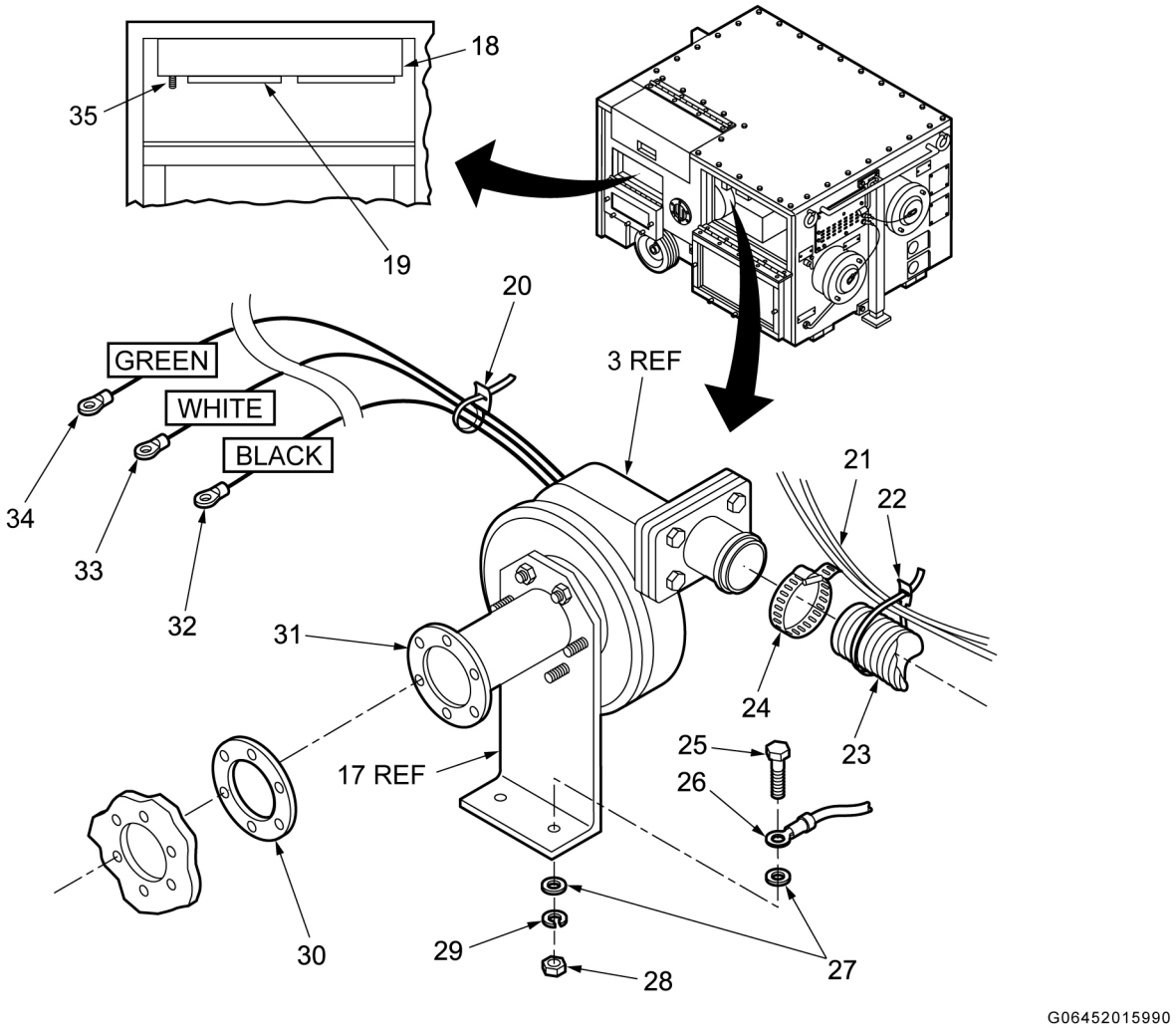


Figure 1. Combustion Fan Removal (Sheet 2 of 2).

Disassembly

1. Remove the four nuts (Figure 2, Item 3), four lockwashers (Figure 2, Item 4), eight flat washers (Figure 2, Item 5), and four bolts (Figure 2, Item 9) from the air outlet (Figure 2, Item 6), of the fan/blower assembly (Figure 2, Item 2). Discard the lockwashers.
2. With the removal of these fasteners from the fan/blower assembly, the fan outlet adapter (Figure 2, Item 8) and the outlet gasket (Figure 2, Item 7) are free to be removed from the fan/blower assembly. Discard the gasket.

NOTE

The combustion fan assembly (Figure 2, Item 1) consists of the fan mount bracket (Figure 2, Item 17) and the fan/blower assembly (Figure 2, Item 2). The fan mount bracket is attached to the fan/blower assembly with six fasteners, two of which have previously been removed in the fan removal process (Step 5 and 6 above) to free the unit from an electrical bundle and a fuel line which were clamped to the unit using these studs.

3. Remove the remaining four nuts (Figure 2, Item 12), four lockwashers (Figure 2, Item 11), and four flat washers (Figure 2, Item 10) from the studs on the fan/blower assembly (Figure 2, Item 2). Discard the lockwashers.

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR - (CONTINUED)

4. With the removal of these fasteners from the fan/blower assembly, the fan mount bracket (Figure 2, Item 13) and the inlet gasket (Figure 2, Item 14) are free to be removed from the fan/blower assembly (Figure 2, Item 2). Discard the gasket.

Inspection

Inspect parts for wear, cracks, or other damage. Parts that are worn, cracked or damaged should be replaced.

Assembly

1. Mount a new inlet gasket (Figure 2, Item 14) on the studs of the fan/blower assembly (Figure 2, Item 2), aligning the holes in the gasket with the studs on the fan/blower assembly.
2. Position the fan/blower assembly (Figure 2, Item 2) on the fan mount bracket (Figure 2, Item 13), aligning the holes in the bracket with the studs on the fan/blower assembly.

NOTE

Leave the 3 o'clock and 9 o'clock stud positions empty temporarily on the combustion fan assembly. Do not put fasteners on these two stud positions at this time.

3. Install four flat washers (Figure 2, Item 10), four new lockwashers (Figure 2, Item 11), and four nuts (Figure 2, Item 12) to secure the fan/blower assembly (Figure 2, Item 2) to the fan mount bracket (Figure 2, Item 13), being careful to leave the 3 o'clock and 9 o'clock stud positions empty temporarily.
4. Position the outlet gasket (Figure 2, Item 7) and adapter outlet (Figure 2, Item 8) on the fan assembly outlet (Figure 2, Item 6) and secure with four bolts (Figure 2, Item 9), eight flat washers (Figure 2, Item 5), four new lockwashers (Figure 2, Item 4), and four nuts (Figure 2, Item 3).

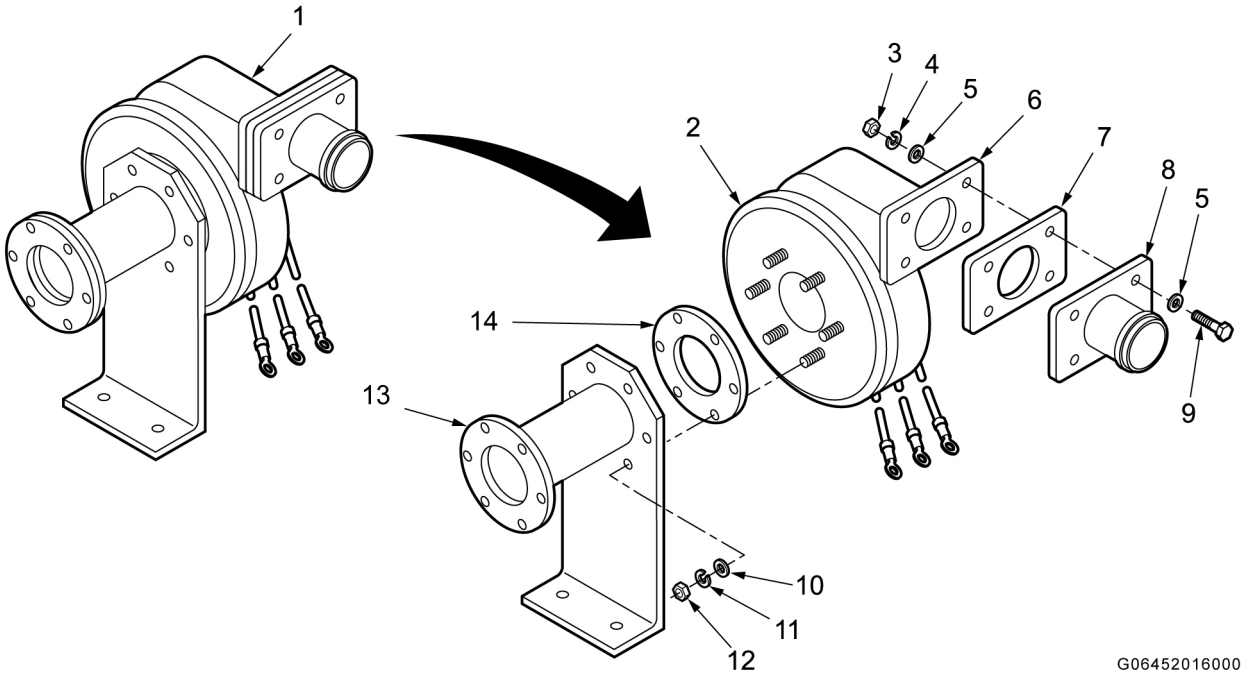


Figure 2. Combustion Fan Disassembly/Assembly.

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR - (CONTINUED)

Installation

1. Install the new gasket (, Figure 8) (Figure 3, Item 9) on the frame (Figure 3, Item 10), aligning the holes in the gasket with the holes in the frame.
2. Mount the combustion fan assembly (Figure 3, Item 1) into the interior of the ASH, ensuring that it is properly positioned with the air inlet of the fan assembly (Figure 3, Item 8) resting flush against the gasket (Figure 3, Item 9) on the frame (Figure 3, Item 10).
3. Install two bolts (Figure 3, Item 2), ground wire (Figure 3, Item 3), four flat washers (Figure 3, Item 4), two new lockwashers (Figure 3, Item 6) and two nuts (Figure 3, Item 5) to fasten the fan mount bracket (Figure 3, Item 7) to the frame. Hand tighten only.
4. Press the air inlet of the combustion fan assembly (Figure 3, Item 8) against the gasket (Figure 3, Item 9) on the interior of the frame (Figure 3, Item 10).
5. Position the fan inlet guard (Figure 3, Item 16) on the exterior of the frame (Figure 3, Item 10) so the holes in each align.
6. Using all of the holes surrounding the fan inlet guard except the hole at the 4 o'clock position, loosely install five bolts (Figure 3, Item 15), ten flat washers (Figure 3, Item 13), five new lockwashers (Figure 3, Item 12) and five nuts (Figure 3, Item 11) to secure the fan inlet guard (Figure 3, Item 16) to the frame (Figure 3, Item 10) and air inlet of the fan assembly (Figure 3, Item 8). Hand tighten only.
7. Position the air inlet cover connector plate (Figure 3, Item 14) on the fan inlet guard (Figure 3, Item 16) on the open hole at the 4 o'clock position, and secure with one bolt (Figure 3, Item 15), two flat washers (Figure 3, Item 13), one new lockwasher (Figure 3, Item 12) and one nut (Figure 3, Item 11).
8. Secure the hardware above that was previously hand tightened. First, tighten the fan inlet guard hardware installed in Step 6; then, tighten the fan mount bracket hardware installed in Step 3. *It is important to execute these two tasks in the order specified.*
9. Install the clamp (Figure 3, Item 31) and wire bundle (Figure 3, Item 30) on the fan assembly (Figure 3, Item 1) on the stud at the 9 o'clock position, and secure with a flat washer (Figure 3, Item 27), new lockwasher (Figure 3, Item 28), and nut (Figure 3, Item 29).
10. Install the clamp (Figure 3, Item 25) and fuel line (Figure 3, Item 26) on the fan assembly (Figure 3, Item 1) on the stud at the 3 o'clock position, and secure with a flat washer (Figure 3, Item 27), new lockwasher (Figure 3, Item 28) and nut (Figure 3, Item 29).
11. Connect the white wire (Figure 3, Item 34) on TB1-5, the black wire (Figure 3, Item 33) on TB-11, and the green wire (Figure 3, Item 32) to the ground stud (Figure 3, Item 17) on the control box (Figure 3, Item 18).
12. Route the three wires from the fan assembly (Figure 3, Item 1) along the wire bundle and secure with two wire tie-down straps (Figure 3, Item 35).
13. Install the air duct (Figure 3, Item 24) on the air outlet of the fan assembly (Figure 3, Item 1) and secure with a clamp (Figure 3, Item 23).
14. Route the wire bundle (Figure 3, Item 21) along the air duct (Figure 3, Item 24) and secure with wire tie-down straps (Figure 3, Item 22), as required.
15. Close and secure the front and rear doors (Figure 3, Item 20) on the right side of the ASH.

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR - (CONTINUED)

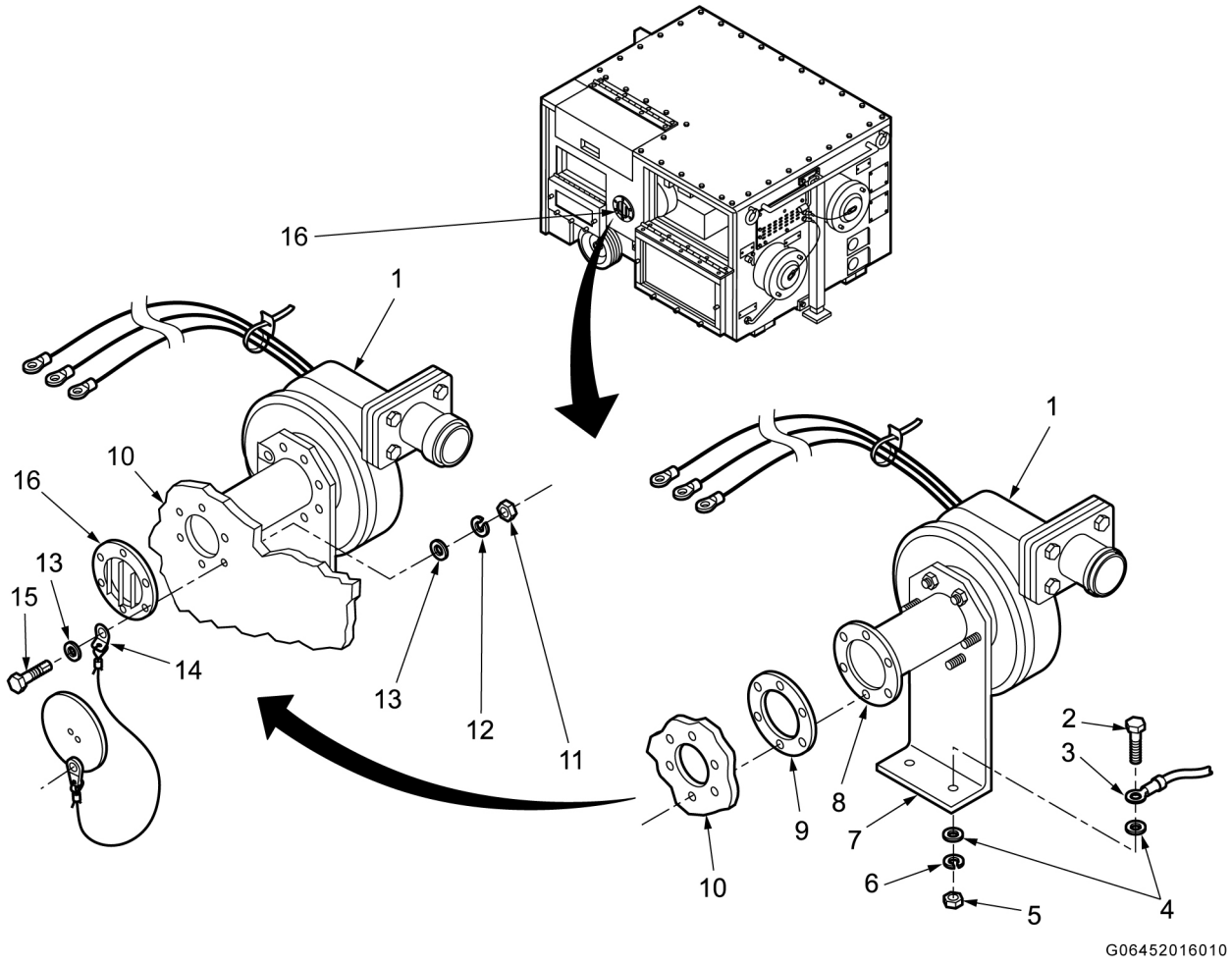


Figure 3. Combustion Fan Assembly Installation (Sheet 1 of 2).

COMBUSTION FAN AND MOUNT ASSEMBLY REPAIR - (CONTINUED)

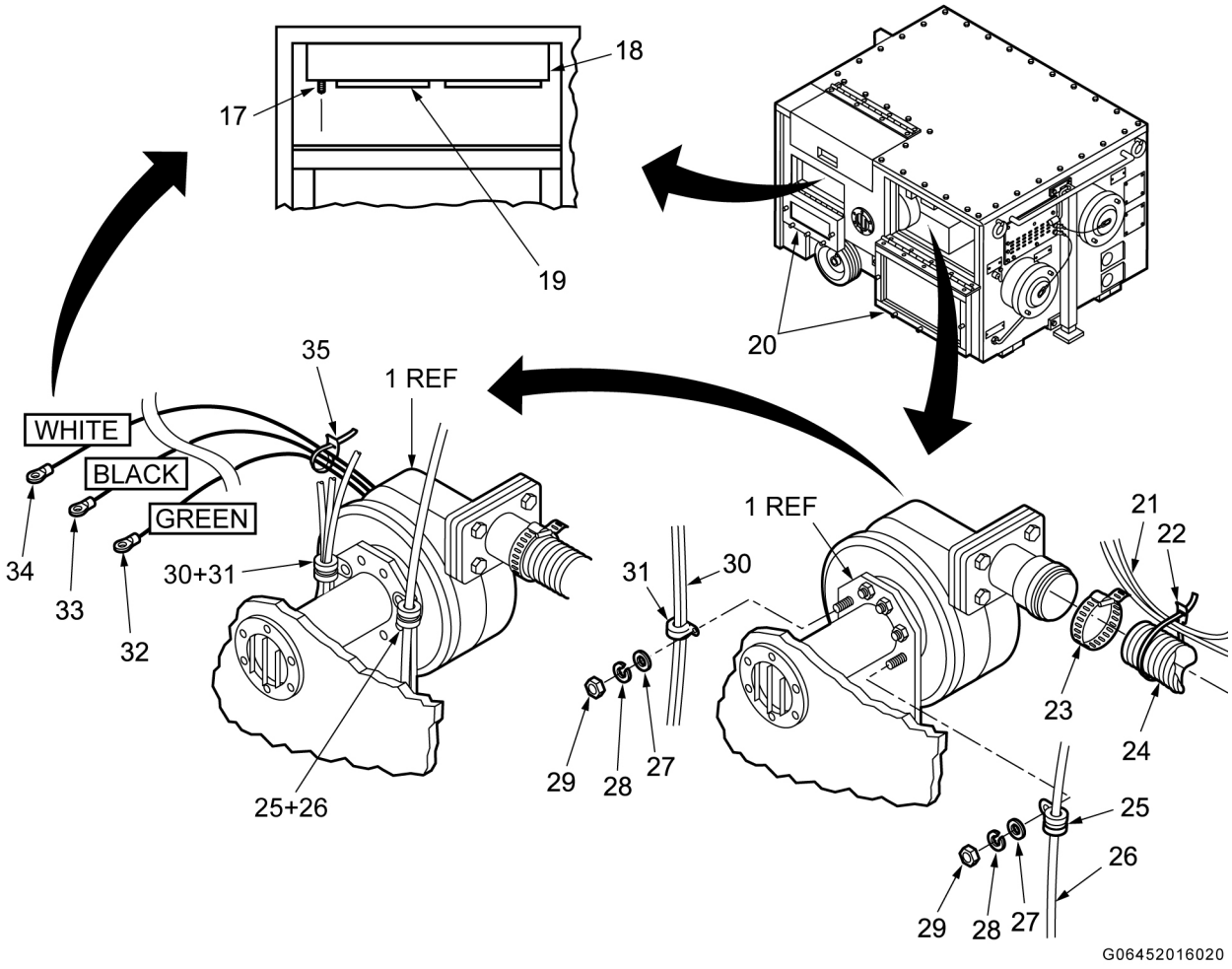


Figure 3. Combustion Fan Assembly Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

HEAT EXCHANGER ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Gasket (WP 0084, Figure 7)
Lockwasher (WP 0100, Figure 26, Item 2)
Lockwasher (WP 0100, Figure 26, Item 8)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

References
10-67-1

Equipment Condition
ASH disconnected from power source
Supply air duct cover removed, WP 0022
Supply air screen removed, WP 0023
Transformer assembly removed, WP 0040, WP 0041

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

HEAT EXCHANGER ASSEMBLY REPAIR

Cover Plate and Gasket Removal

1. Remove the eight nuts (Figure 1, Item 7), eight lockwashers (Figure 1, Item 6), eight flat washers, (Figure 1, Item 5) and the thermostat bracket (Figure 1, Item 8) from the cover plate (Figure 1, Item 4). Discard the lockwashers.

NOTE

The cover plate (Figure 1, Item 4) may have two braided wires attached on some models.

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

2. Tag and disconnect the braided wires (Figure 1, Item 9) and (Figure 1, Item 10), if attached to the cover plate (Figure 1, Item 4).
3. Remove the cover plate (Figure 1, Item 4) and the gasket (Figure 1, Item 3). Discard the gasket.
4. Open the right-side rear door (Figure 1, Item 1) and larger, right-side front door (Figure 1, Item 2) on the ASH.

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

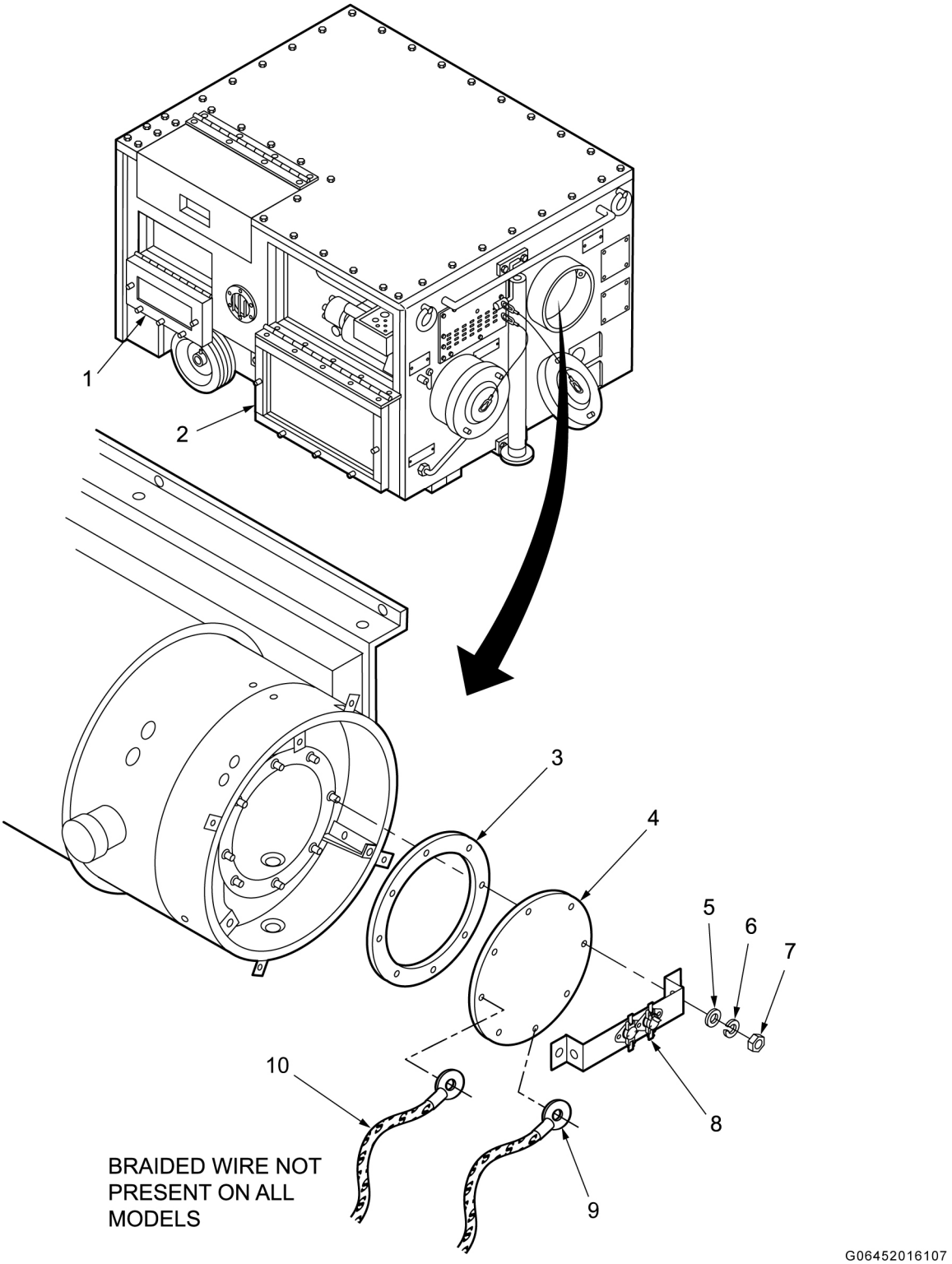


Figure 1. Burner Access Port Cover Disassembly/Removal.

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

Flame Sensor Removal

NOTE

The grommets on the flame sensor do not come off the assembly.

NOTE

The flame sensor (Figure 2, Item 6) may have a braided wire with terminal lug (Figure 2, Item 10) attached on some models. The braided wire is attached between the two grommets (Figure 2, Item 8) and (Figure 2, Item 9).

1. Tag and disconnect wire TB3-6/D1-YEL (Figure 2, Item 1) and wire TB3-7/D1-YEL (Figure 2, Item 2) from TB3 (Figure 2, Item 3). Remove wire tie-down straps (Figure 2, Item 4), as required.
2. If the flame sensor (Figure 2, Item 6) is without braided wire; loosen the clamp (Figure 2, Item 5) and remove the flame sensor.
3. If the flame sensor (Figure 2, Item 6) has braided wire; loosen the clamps (Figure 2, Item 5) and (Figure 2, Item 13), slide the braided wire (Figure 2, Item 12) off the tube (Figure 2, Item 14), and remove the flame sensor.
4. Push the bottom grommet (Figure 2, Item 9) out of the heat exchanger (Figure 2, Item 7) toward heat exchanger shell (Figure 2, Item 11).
5. Push the top grommet (Figure 2, Item 8) away from the heat exchanger shell (Figure 2, Item 11) toward the heat exchanger center (Figure 2, Item 7).
6. Remove the flame sensor (Figure 2, Item 6) and braided wire (Figure 2, Item 10), if attached, from between the heat exchanger (Figure 2, Item 7) and heat exchanger shell (Figure 2, Item 11).

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

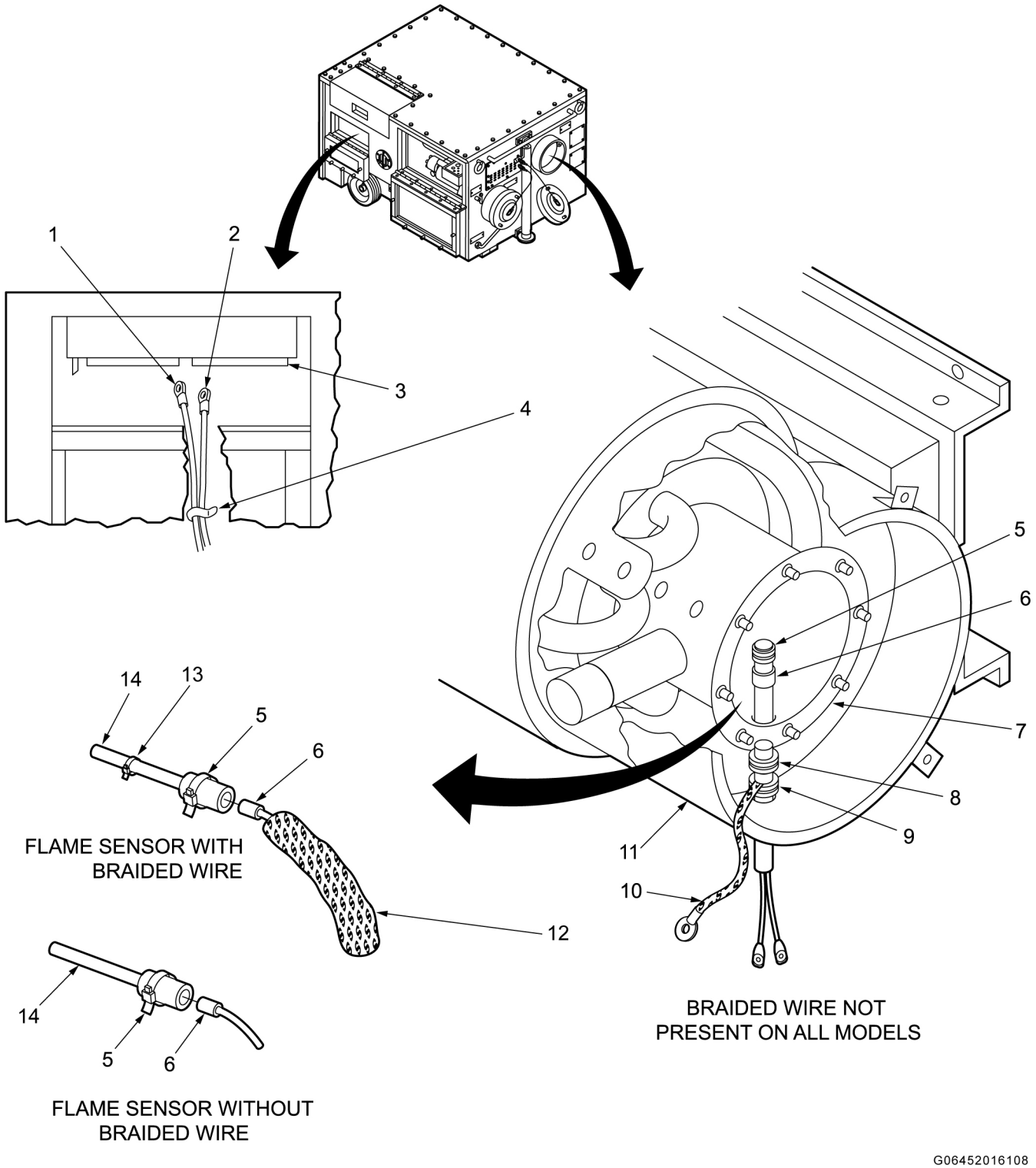


Figure 2. Flame Sensor Removal.

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

Fuel Line and Sight Glass Removal

NOTE

The fuel line may have a braided wire with terminal lug attached on some models. The braided wire (Figure 3, Item 8) is located between the two grommets (Figure 3, Item 3) and (Figure 3, Item 4).

NOTE

There is an automatic check valve in the fuel pump, but be prepared for a small fuel leak when disconnecting the fuel line from the fuel pump and/or the burner. Have a “catch basin” type container ready to catch the leaking fuel or plenty of towels or rags underneath the work area to absorb the leaking fuel.

1. Disconnect the fuel line (Figure 3, Item 2) that runs from the fuel pump (Figure 3, Item 1) to the burner located inside the heat exchanger (Figure 3, Item 5). Refer to WP 0063 for detailed instructions on disconnecting the fuel line at the fuel pump.
2. Push the outer grommet (Figure 3, Item 3) away from center of the heat exchanger (Figure 3, Item 6) toward the heat exchanger shell (Figure 3, Item 7).
3. Push the inner grommet (Figure 3, Item 4) away from the heat exchanger shell (Figure 3, Item 7) and toward the heat exchanger center (Figure 3, Item 6).
4. Remove the fuel line (Figure 3, Item 2) from between the heat exchanger (Figure 3, Item 6) and the heat exchanger shell (Figure 3, Item 7).
5. Remove the sight glass (Figure 3, Item 9) in the rear panel of the ASH between the exhaust stack and the fuel tank cap and gauge. The threaded sight glass is screwed into the end of the heat exchanger and its removal will require access to the sight glass through the flapped portal on the rear panel of the ASH.
6. Unscrew the threaded sight glass (Figure 3, Item 9) from the end of the heat exchanger.

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

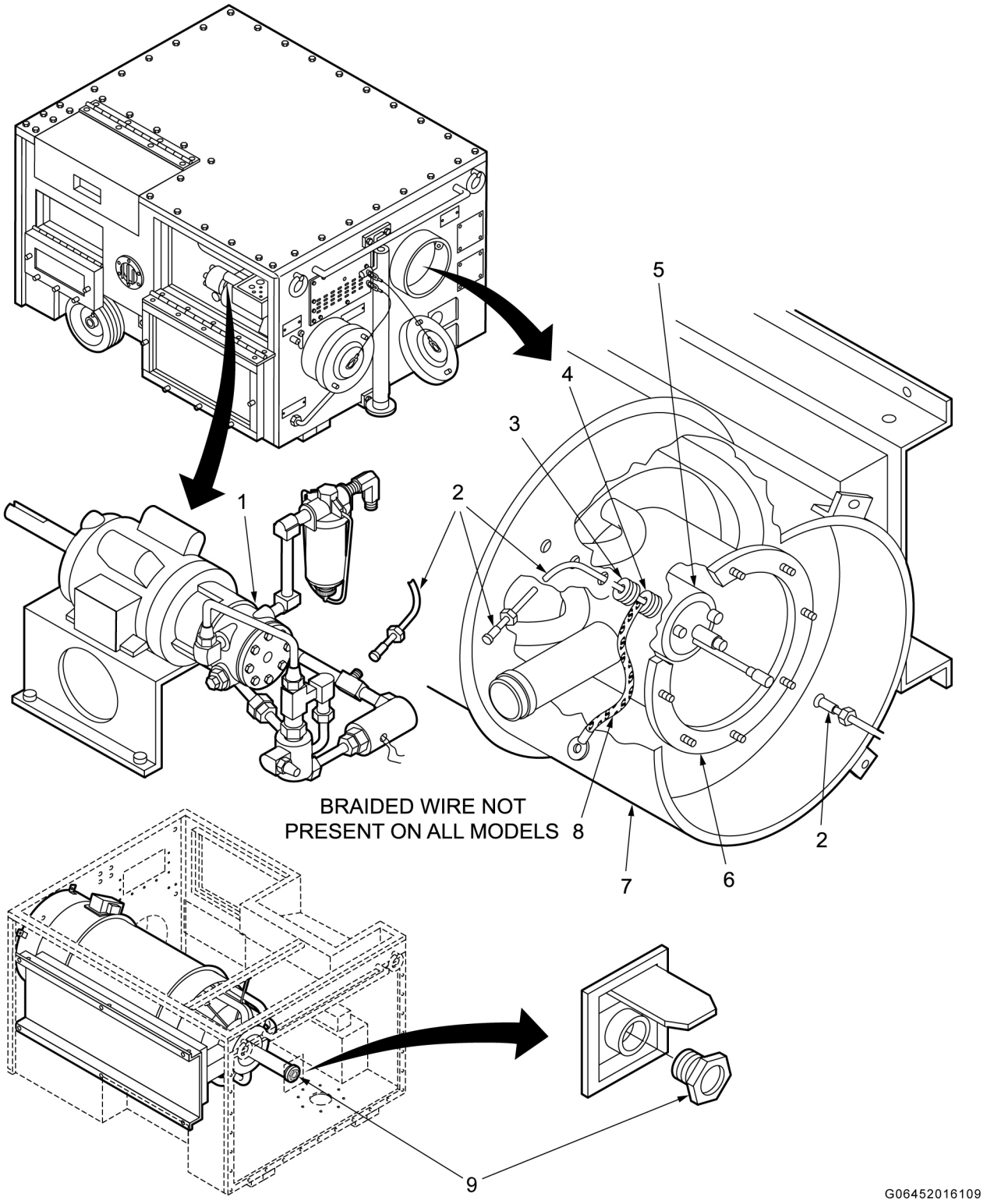


Figure 3. Sight Glass & Fuel Line Removal/Installation.

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

Sight Glass and Fuel Line Installation

NOTE

The sight glass is screwed into the end of the heat exchanger and its installation requires access to the exchanger through the flapped portal on the rear panel of the ASH.

1. Apply anti-seize compound to the sight glass (Figure 3, Item 9) and install the sight glass into the end of the heat exchanger. Screw the threaded end of the sight glass into the end of the heat exchanger through the flapped portal.

NOTE

The fuel line may have a braided wire with terminal lug attached on some models. The braided wire (Figure 3, Item 8) is located between the two grommets (Figure 3, Item 3) and (Figure 3, Item 4).

2. Insert one end of the fuel line (Figure 3, Item 2) through the hole near the top of the heat exchanger shell (Figure 3, Item 7) from the inside.
3. Insert the other end of the fuel line (Figure 3, Item 2) through the hole near the top of the heat exchanger (Figure 3, Item 6).
4. Install one grommet (Figure 3, Item 3) on the heat exchanger shell (Figure 3, Item 7) and the other grommet (Figure 3, Item 4) on the heat exchanger (Figure 3, Item 6).
5. Connect the fuel line (Figure 3, Item 2) to the fuel pump (Figure 3, Item 1) and the burner (Figure 3, Item 5).

Flame Sensor Installation

1. Insert the wire end of flame sensor (Figure 4, Item 7) through the bottom hole (Figure 4, Item 8) of heat exchanger shell (Figure 4, Item 11) from the inside.
2. Insert eye end of the flame sensor (Figure 4, Item 7) and braided wire (Figure 4, Item 12), if attached, through the bottom hole (Figure 4, Item 8) of heat exchanger shell (Figure 4, Item 11) from the outside.
3. Install grommet (Figure 4, Item 10) in heat exchanger shell (Figure 4, Item 11) and grommet (Figure 4, Item 9) in heat exchanger (Figure 4, Item 6).
4. Installation of the flame sensor is dependent on whether the flame sensor is equipped with a braided wire or not, as outlined below:
   a. If the flame sensor is equipped without a braided wire; slide the clamp (Figure 4, Item 13) onto the tube (Figure 4, Item 14) and install the flame sensor (Figure 4, Item 7) into the tube, and secure with the clamp.
   b. If the flame sensor is equipped with a braided wire; slide the clamps (Figure 4, Item 13) and (Figure 4, Item 15) onto the tube (Figure 4, Item 14), install the flame sensor (Figure 4, Item 7) into the tube, slide the braided wire (Figure 4, Item 12) over the tube and secure with the clamp (Figure 4, Item 15). Position the clamp (Figure 4, Item 13) over the flame sensor (Figure 4, Item 7) and braided wire (Figure 4, Item 12) and secure.
5. Connect wires (Figure 4, Item 1) and (Figure 4, Item 2) as follows to the terminal board (TB3) (Figure 4, Item 3). Install wire tie-down straps (Figure 4, Item 4), as required.
   a. Connect wire TB3-6/D1-YEL (Figure 4, Item 1) to position TB3-6.
   b. Connect wire D1-YEL/TB3-7 (Figure 4, Item 2) to position TB3-7.

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

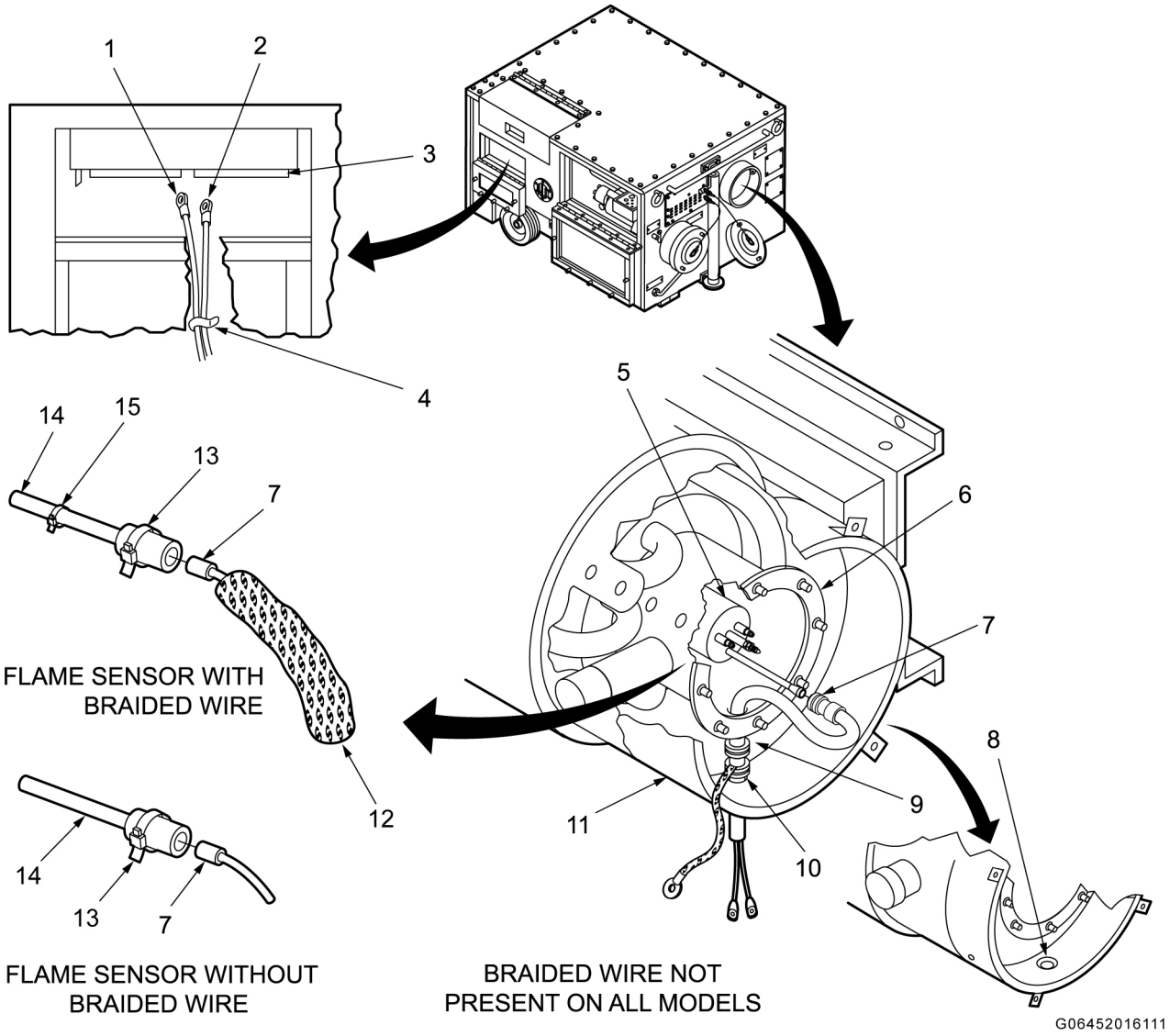


Figure 4. Flame Sensor Installation.

6. Mount the new gasket (Figure 5, Item 3) on the cover plate (Figure 5, Item 4), aligning the holes in the gasket with the holes in the cover plate.

NOTE

The cover plate may have two braided wires attached on some models.

7. Mount the gasket and cover plate (Figure 5, Item 4) on the heat exchanger studs (Figure 5, Item 11), aligning the holes on the cover plate/gasket with the studs on the heat exchanger. If equipped with two braided wires, attach one braided wire (Figure 5, Item 9) on the stud at the 6 o'clock position and the other braided wire (Figure 5, Item 10) on the stud at the 10 o'clock position. Remove marker tags.

HEAT EXCHANGER ASSEMBLY REPAIR - (CONTINUED)

8. Mount the thermostat bracket (Figure 5, Item 8) on the cover plate so that it is horizontal to the bottom of the ASH. Typically, best results are achieved by using the studs at the 3 o'clock and the 9 o'clock positions to mount the bracket.
9. With the gasket, cover plate, braided wires (if any), and bracket all properly positioned, install eight flat washers (Figure 5, Item 5), eight new lockwashers (Figure 5, Item 6), and eight nuts (Figure 5, Item 7) on the eight heat exchanger studs (Figure 5, Item 11) and tighten securely.
10. Close right-side rear door (Figure 5, Item 1) and larger right-side front door (Figure 5, Item 2) on the ASH.

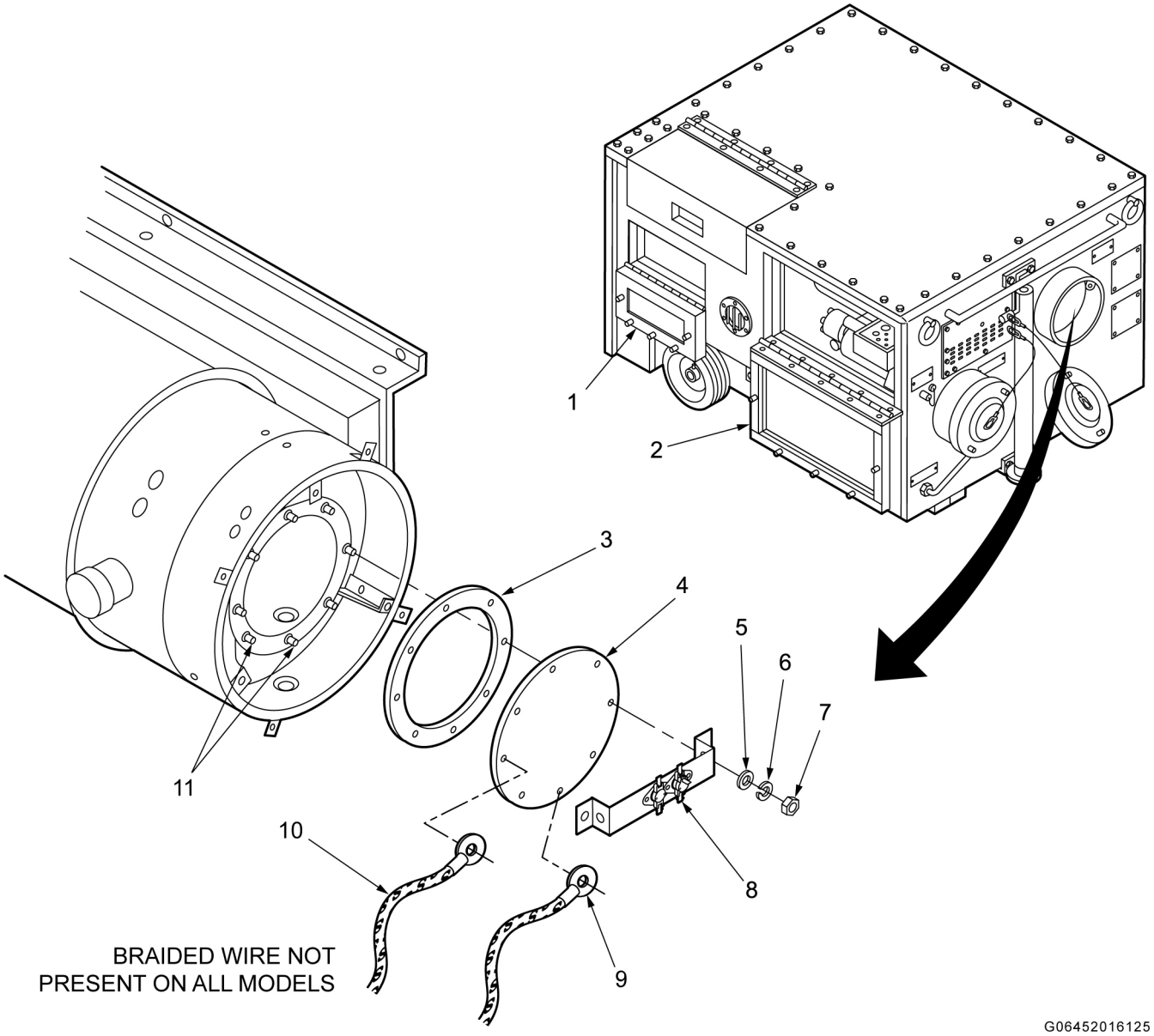


Figure 5. Heat Exchanger Burner Access Port Cover.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

HEAT EXCHANGER MODEL H-120 REPAIR

INITIAL SETUP:

Tools and Special Tools
Gloves, Heat-Protective (WP 0116, Item 5)
Tool Kit, General Mechanic's (WP 0117Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Lockwasher (WP 0100, Figure 25, Item 3)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (2)

Equipment Condition
ASH disconnected from power source
Burner assembly removed, WP 0042
Control box cover removed, WP 0018
Jack assembly removed, WP 0046
Rear panel removed, WP 0020
Supply air duct cover removed, WP 0022
Supply air screen removed, WP 0023
Top panel removed, WP 0019
Transformer assembly removed, WP 0040, WP 0041

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in Figure 1; the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

Insulation should only be removed when necessary to gain access to another component or when replacement of the insulation is necessary.

HEAT EXCHANGER MODEL H-120 REPAIR

Removal

A precondition for the removal of the heat exchanger assembly from the ASH frame is the removal of the unit's top and rear panels to provide access since the exchanger will be removed out the back. Refer to WP 0019 and WP 0020 for instructions on the proper method of removing the top and rear panels, respectively.

There are two braces that are referred to in this procedure that form the top of the ASH frame. To distinguish between them, the center brace that attaches to the heat exchanger shell will be referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace will be referred to as the secondary brace and is located closer to the rear of the exchanger housing the sight glass. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and affixed to the ASH frame during the entire procedure.

These primary and secondary braces, along with the heat exchanger's other major structural components, are highlighted in the overview of the heat exchanger assembly provided by Figure 1.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

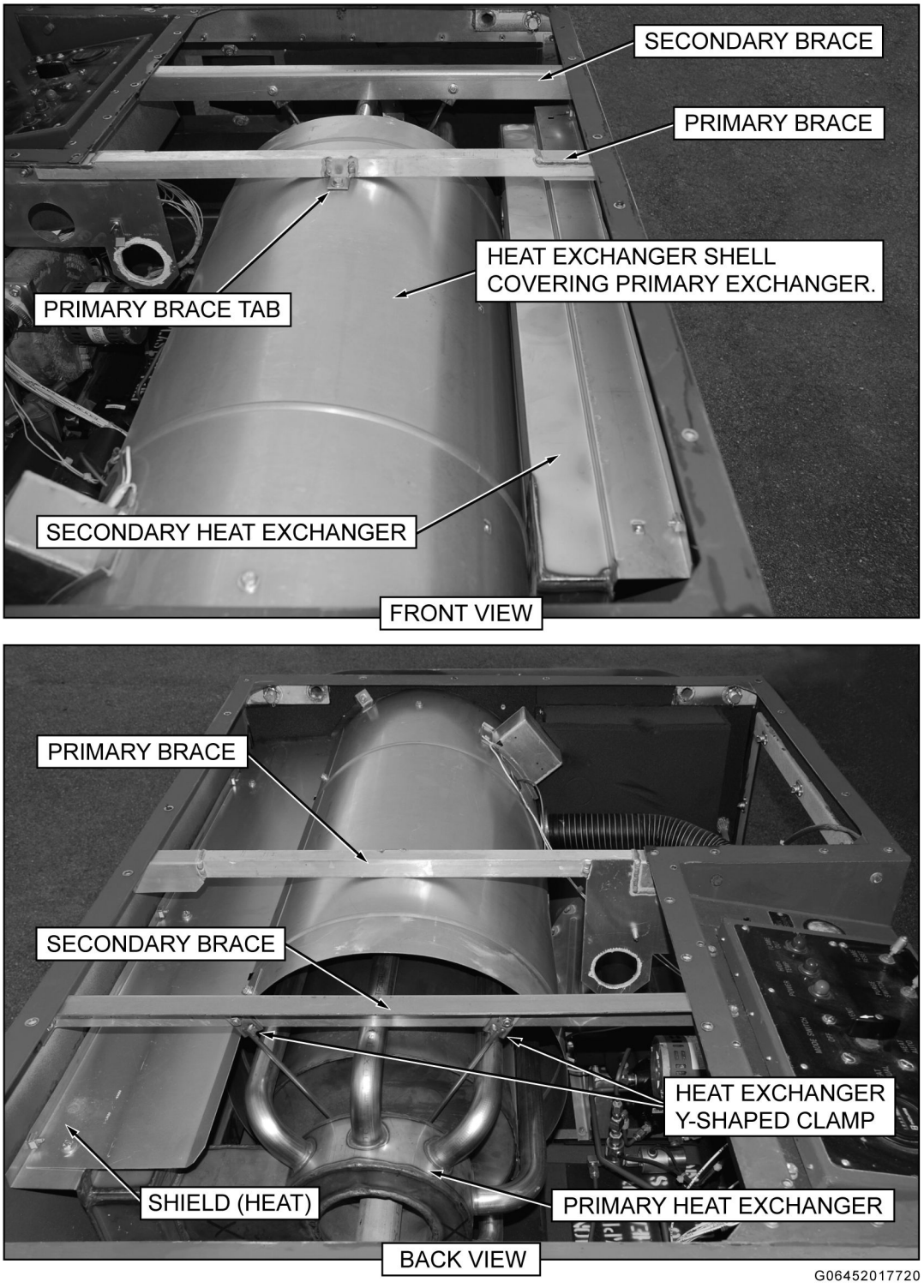


Figure 1. Heat Exchanger (Model H-120) Overview of Structural Components.

1. Loosen the clamp (Figure 2, Item 12) and remove the air supply hose (Figure 2, Item 13) from the heat exchanger's combustion air intake port (Figure 2, Item 14).

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

2. Remove six screws (Figure 2, Item 5), six lockwashers (Figure 2, Item 6), and six flat washers (Figure 2, Item 7) from the heat shield (Figure 2, Item 4), which frees the heat shield to be removed from the heat exchanger. Discard the lockwashers.
3. Remove the seven nuts (Figure 2, Item 11), seven lockwashers (Figure 2, Item 10), fourteen flat washers (Figure 2, Item 8) and seven bolts (Figure 2, Item 9) fastening the heat exchanger's mounting ring (Figure 2, Item 15) to the ASH frame. The front of the heat exchanger is now free of the ASH frame. Discard the lockwashers.

NOTE

The removal of these seven fasteners from the heat exchanger's mounting ring frees the front of heat exchanger from the ASH frame, but it does not free the mounting ring from the heat exchanger.

4. Remove the six screws (Figure 2, Item 3), six lockwashers (Figure 2, Item 2) and six flat washers (Figure 2, Item 1) that secure the heat exchanger to the left side of the ASH frame. Discard the lockwashers.
5. Remove the six screws (Figure 2, Item 3), six lockwashers (Figure 2, Item 2) and six flat washers (Figure 2, Item 1) that secure the heat exchanger to the left side of the ASH frame. Discard the lockwashers.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

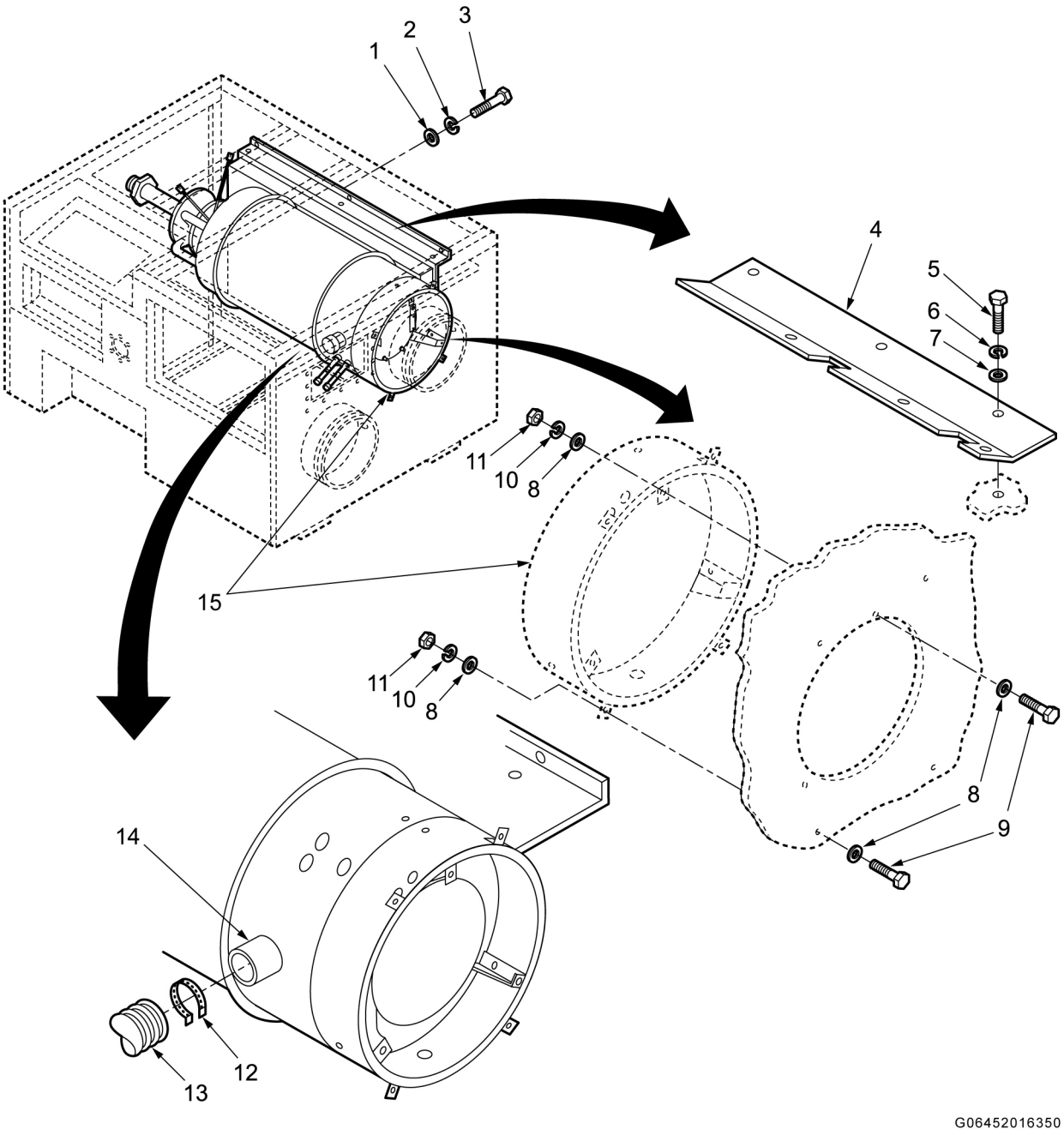


Figure 2. Preparation for Heat Exchanger (Model H-120) Removal.

6. Remove the two nuts (Figure 3, Item 1), two lockwashers (Figure 3, Item 2), four flat washers (Figure 3, Item 3) and two bolts (Figure 3, Item 5) that attach the exchanger's Y-shape clamp (Figure 3, Item 21) to the secondary brace (Figure 3, Item 4). Discard the lockwashers.
7. Remove one nut (Figure 3, Item 10), one lockwasher (Figure 3, Item 9), two flat washers (Figure 3, Item 7) and one bolt (Figure 3, Item 8) from the left side of the primary brace (Figure 3, Item 6). Discard the lockwashers.
8. Remove one nut (Figure 3, Item 13), one lockwasher (Figure 3, Item 12), two flat washers (Figure 3, Item 11) and one bolt (Figure 3, Item 20) from the mid-right side of the primary brace (Figure 3, Item 6). Discard the lockwashers.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

9. Remove the one nut (Figure 3, Item 14), one lockwasher (Figure 3, Item 15), two flat washers (Figure 3, Item 16), ground wire (Figure 3, Item 17), star lockwasher (Figure 3, Item 18), and one bolt (Figure 3, Item 19) from the far-right side of the primary brace (Figure 3, Item 6). Discard the lockwashers.
10. The primary brace is no longer fastened to the ASH frame but continues to carry the full weight of the exchanger via the primary brace tab that remains attached to the heat exchanger shell.

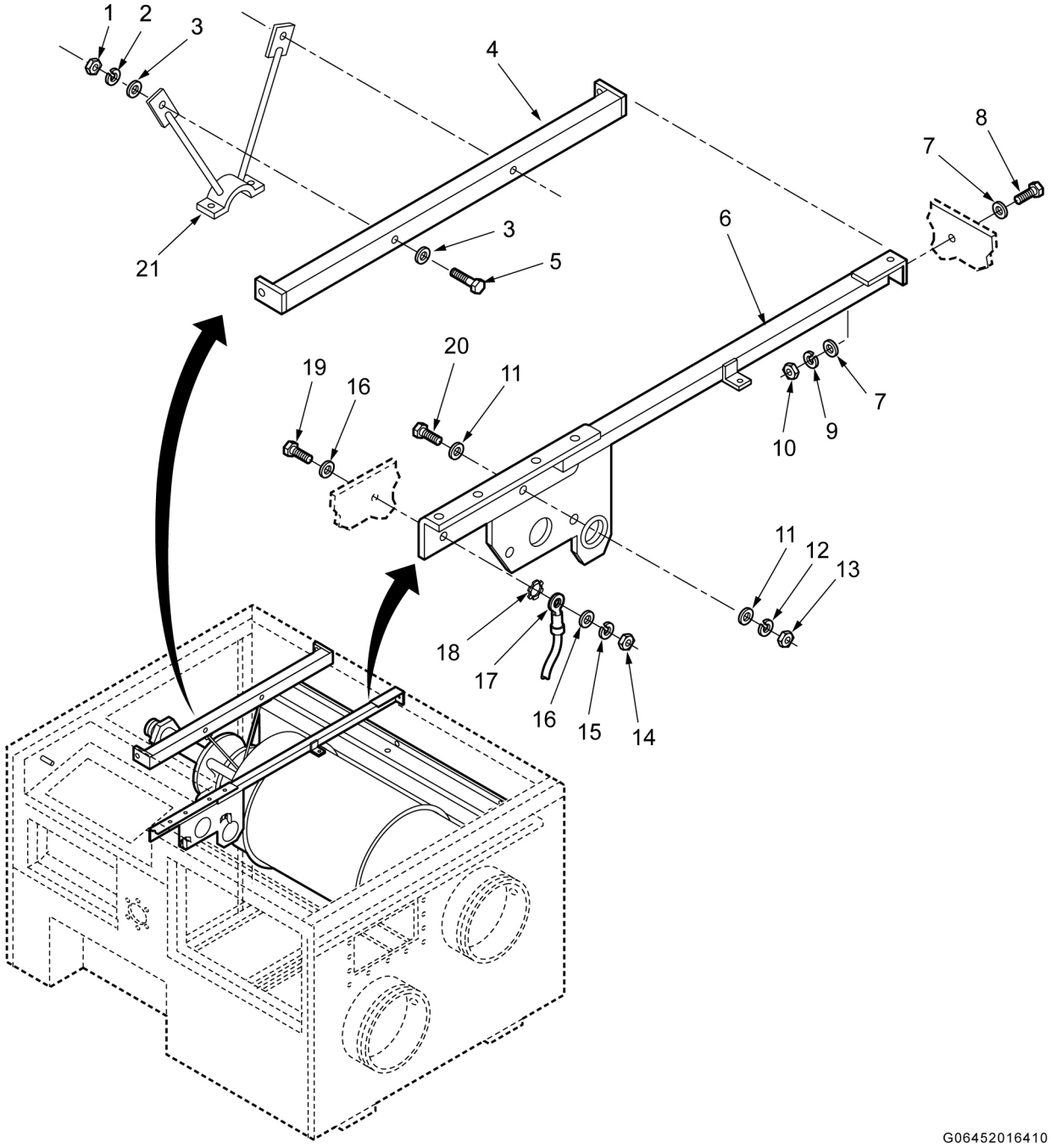


Figure 3. Heat Exchanger (Model H-120) Primary Brace Removal.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

WARNING

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

CAUTION

Damage to the heat exchanger will result if the last support screw (Figure 4, Item 1) through the primary brace tab (Figure 4, Item 3) is removed without supporting the assembly. Support the front and rear of the heat exchanger prior to the removal of this fastener.

11. One person shall position himself to support the front end of the heat exchanger (Figure 4, Item 6) while the second person supports the back end of the heat exchanger (Figure 4, Item 7).
12. With the heat exchanger properly supported at both ends, remove the screw (Figure 4, Item 1), lockwasher (Figure 4, Item 9), and flat washer (Figure 4, Item 8) connecting the primary brace tab (Figure 4, Item 3) to the heat exchanger at the hole (Figure 4, Item 4) on top of the heat exchanger (Figure 4, Item 5). Discard the lockwasher.
13. The primary brace (Figure 4, Item 2) is now free of the exchanger and can be removed from the ASH.
14. Remove the heat exchanger (Figure 4, Item 5) from the ASH by carefully sliding it out through the back of the ASH. Be sure to use two people to accomplish this task safely.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

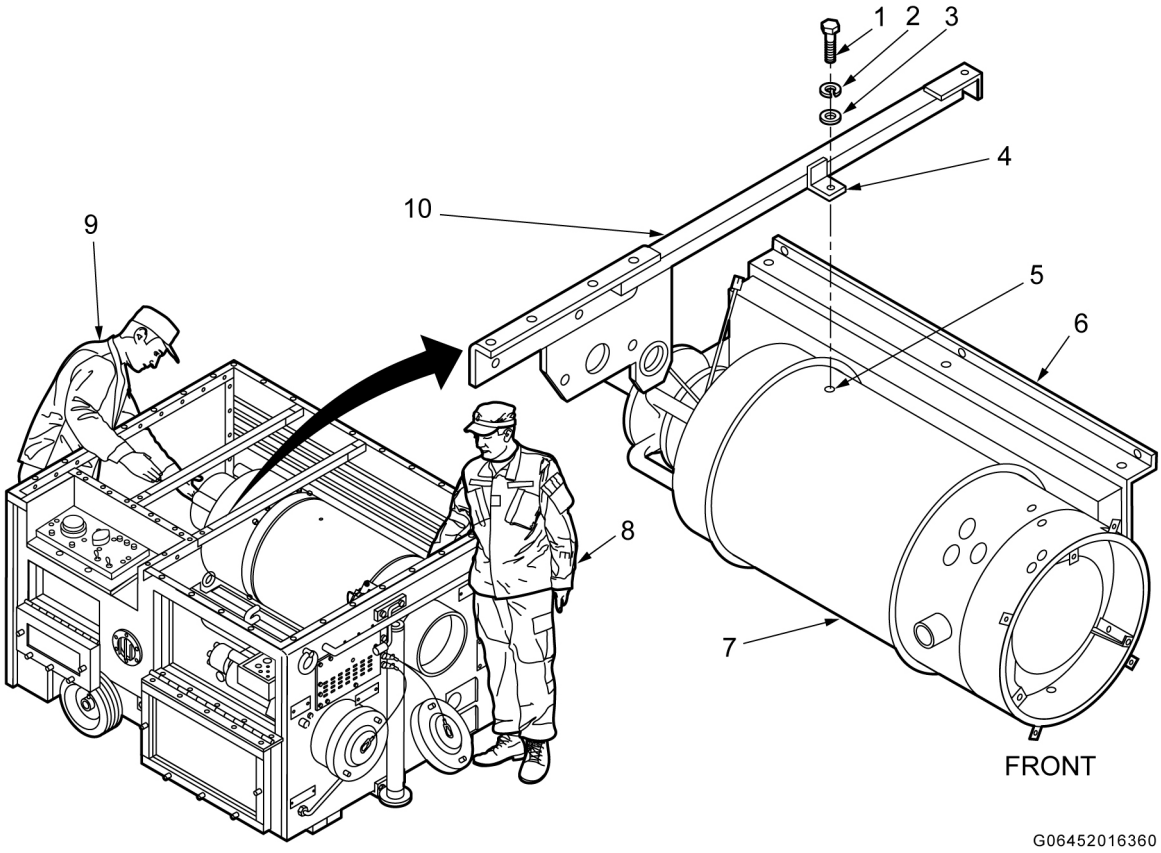


Figure 4. Heat Exchanger (Model H-120) Removal/Installation.

Disassembly

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in (Figure 1); the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary heat exchanger.

1. Remove the six nuts (Figure 5, Item 7), six lockwashers (Figure 5, Item 8), twelve flat washers (Figure 5, Item 5), and six bolts (Figure 5, Item 4) from the three brackets (Figure 5, Item 3) that secure the mounting ring (Figure 5, Item 2) to the heat exchanger (Figure 5, Item 1). Remove the three brackets (Figure 5, Item 3) and mounting ring (Figure 5, Item 2) from the heat exchanger. Discard the lockwashers.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

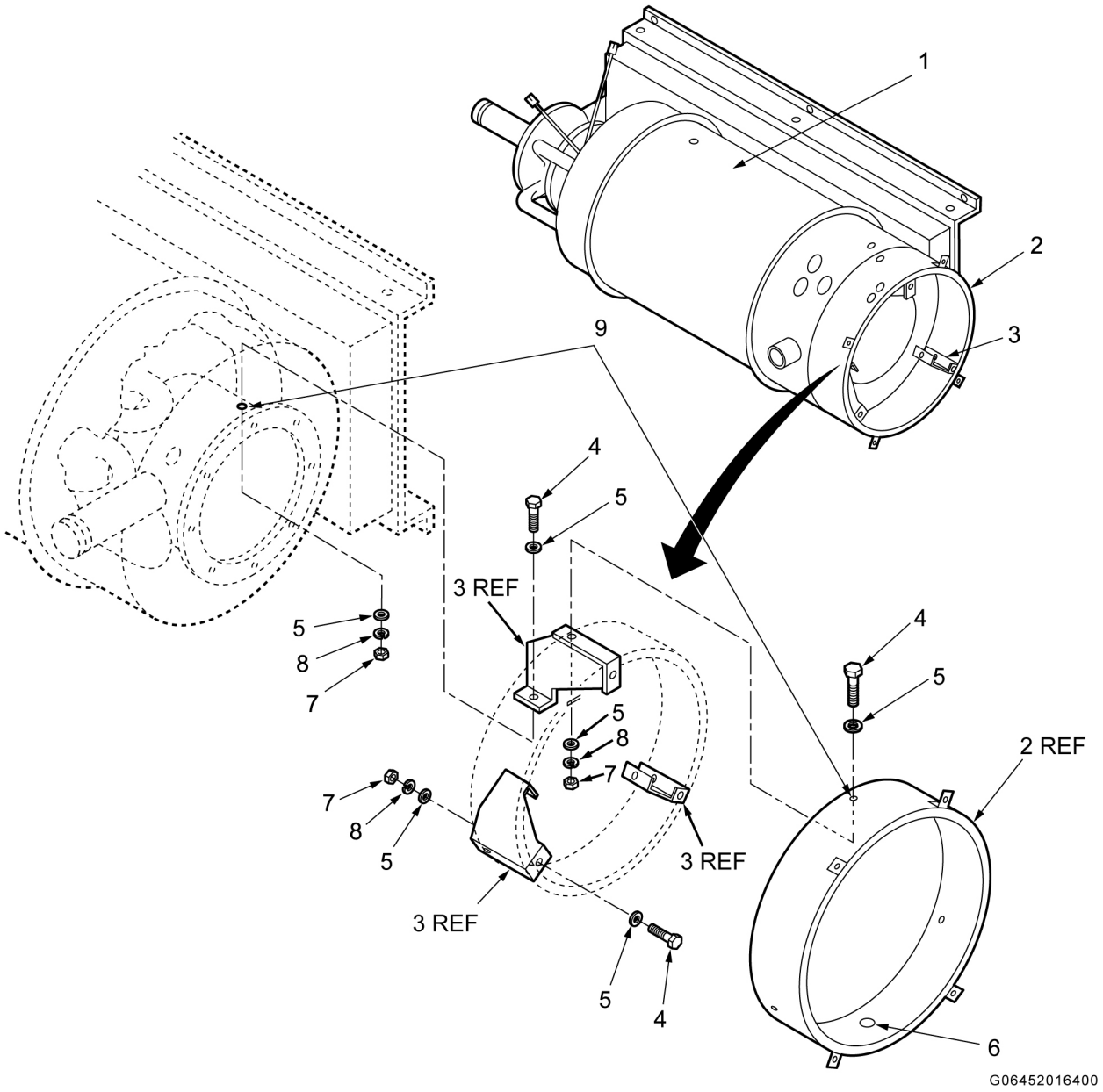


Figure 5. Heat Exchanger (Model H-120) Disassembly: Mounting Ring.

2. Remove the six nuts (Figure 6, Item 4), twelve flat washers (Figure 6, Item 2) and six bolts (Figure 6, Item 1) from the two clamps (Figure 6, Item 3) on tubes No. 5 and No. 7 that secure the heat exchanger (Figure 6, Item 5) to the heat exchanger shell (Figure 6, Item 8). Discard the lockwashers.

NOTE

The heat exchanger shell (Figure 6, Item 8) must be tilted to allow clearance for the heat exchanger air inlet pipe (Figure 6, Item 6) when the shell is removed from the heat exchanger assembly.

3. Remove the heat exchanger shell (Figure 6, Item 8) from the heat exchanger (Figure 6, Item 5).

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

4. Remove the two nuts (Figure 6, Item 10), two lockwashers (Figure 6, Item 11), four flat washers (Figure 6, Item 12) and two bolts (Figure 6, Item 13) that fasten the Y-shaped clamp (Figure 6, Item 9) to the heat exchanger. The Y-shaped clamp is now free of the heat exchanger.
   a. Remove the Y-shaped clamp (Figure 6, Item 9) from the heat exchanger.
   b. Discard the lockwashers.
5. Remove the captive nuts (Figure 6, Item 7) from the heat exchanger only if damaged and replacement is required.

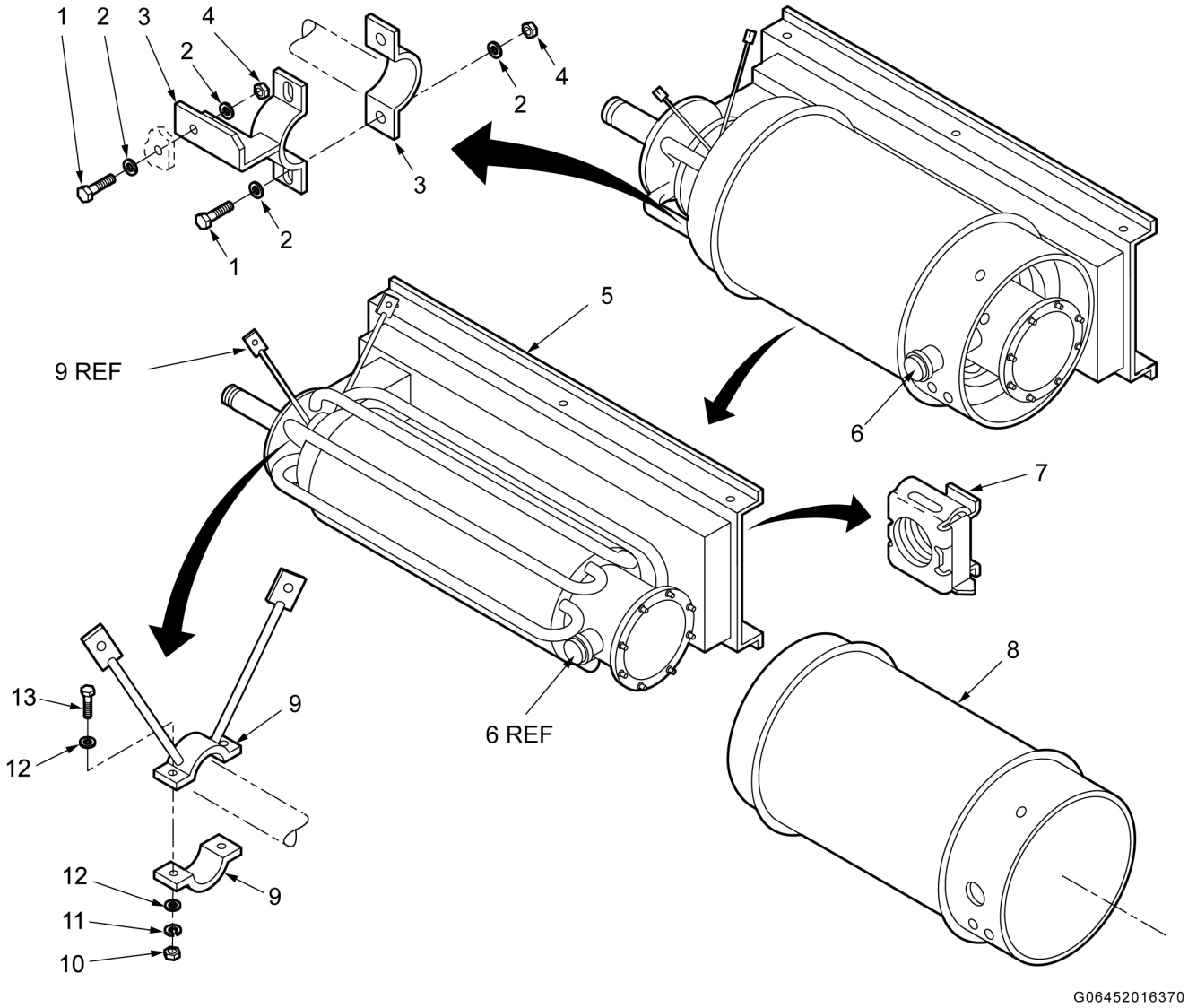


Figure 6. Heat Exchanger (Model H-120) Disassembly: Clamps.

Inspection

1. Inspect all parts for wear, cracks, corrosion, bent or broken terminals.
2. Inspect all hardware for stripped or damaged threads.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

Assembly

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

NOTE

The top tube of the heat exchanger (Figure 7, Item 4), which is tube No. 2, is positioned in between the two top ends of the Y-shaped clamp (Figure 7, Item 3) when the clamp is properly positioned.

1. Install the Y-shaped clamp (Figure 7, Item 2), four flat washers (Figure 7, Item 7), two bolts (Figure 7, Item 1), two new lockwashers (Figure 7, Item 6) and two nuts (Figure 7, Item 5) to secure the Y-shaped clamp to the heat exchanger.
   a. Verify that the clamp is properly positioned as defined in the note above, with tube No. 2 (Figure 7, Item 4), positioned in between the two top ends of the Y-shaped clamp (Figure 7, Item 3).
   b. Tighten clamp hardware hand tight only. Hardware will be securely tightened later during the installation of the heat exchanger assembly.

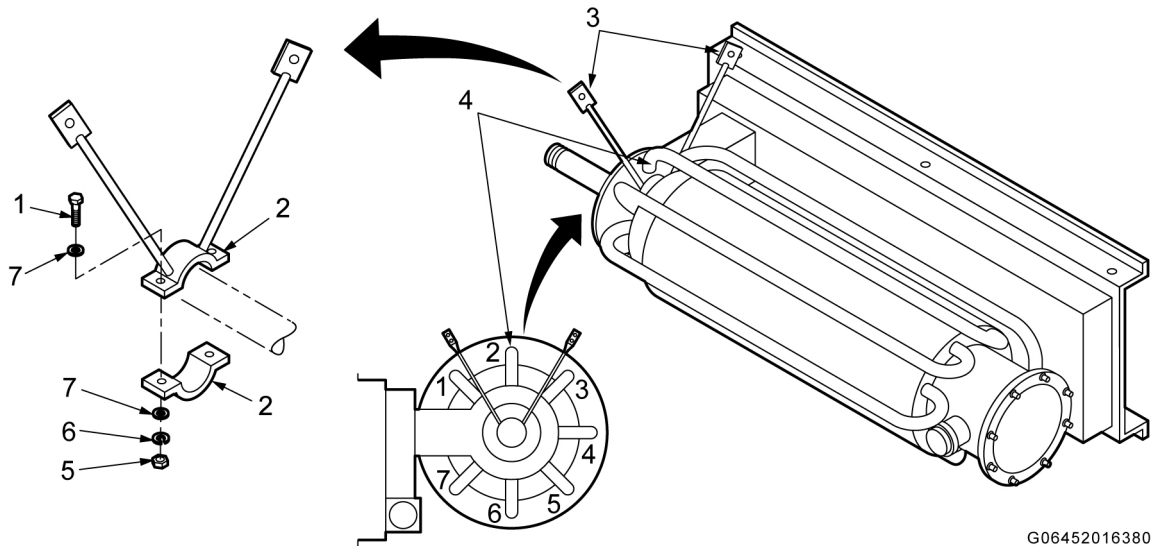


Figure 7. Heat Exchanger (Model H-120) Clamp Assembly.

2. Install any captive nuts (Figure 8, Item 2) on the heat exchanger that were removed during disassembly.
3. Slide the heat exchanger shell (Figure 8, Item 3) onto the heat exchanger (Figure 8, Item 1), being careful to align the air inlet pipe (Figure 8, Item 5) with the large hole in the side of the shell (Figure 8, Item 4).
4. Install two clamps (Figure 8, Item 6) on the back of the heat exchanger (Figure 8, Item 1), one on tube 5, and one on tube 7 (Figure 8, Item 10), to attach the heat exchanger to the shell . Secure the clamps with eight flat washers (Figure 8, Item 8), four bolts (Figure 8, Item 7), and four nuts (Figure 8, Item 9). Tighten all clamp hardware hand tight only. This hardware will be tightened securely during installation of the exchanger assembly.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

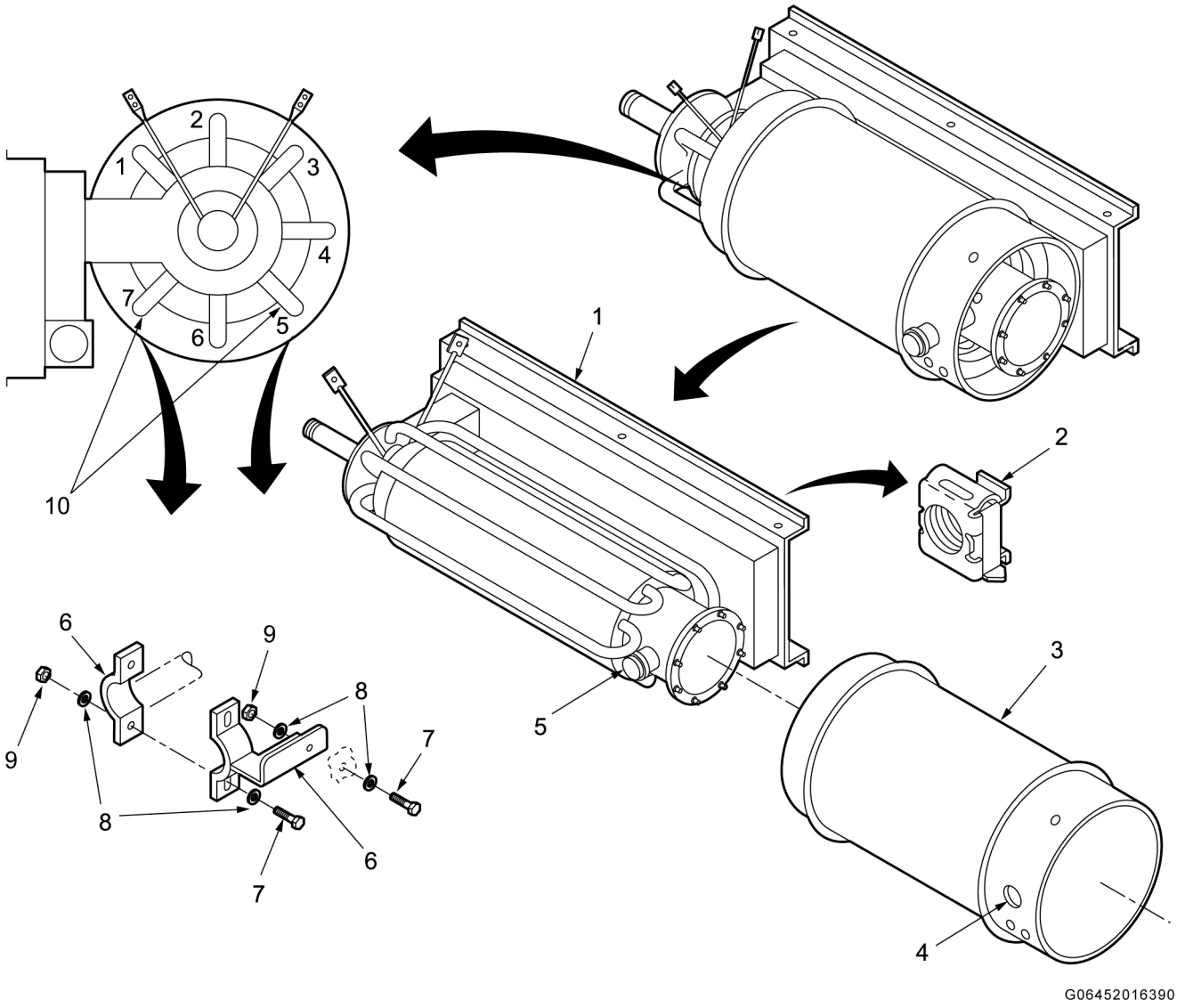


Figure 8. Heat Exchanger (Model H-120) Assembly.

5. Slide the mounting ring (Figure 9, Item 2)on the end of heat exchanger shell (Figure 9, Item 1), positioning the larger hole in the ring (Figure 9, Item 6) towards the bottom of the shell.
6. Install the three brackets (Figure 9, Item 3) between the heat exchanger (Figure 9, Item 1) and the mounting ring (Figure 9, Item 2), aligning the bracket holes with the holes in the mounting ring and the holes in the exchanger surrounding the burner opening (Figure 9, Item 9); and secure each bracket with four flat washers (Figure 9, Item 5), two bolts (Figure 9, Item 4), two new lockwashers (Figure 9, Item 8) and two nuts (Figure 9, Item 7).

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

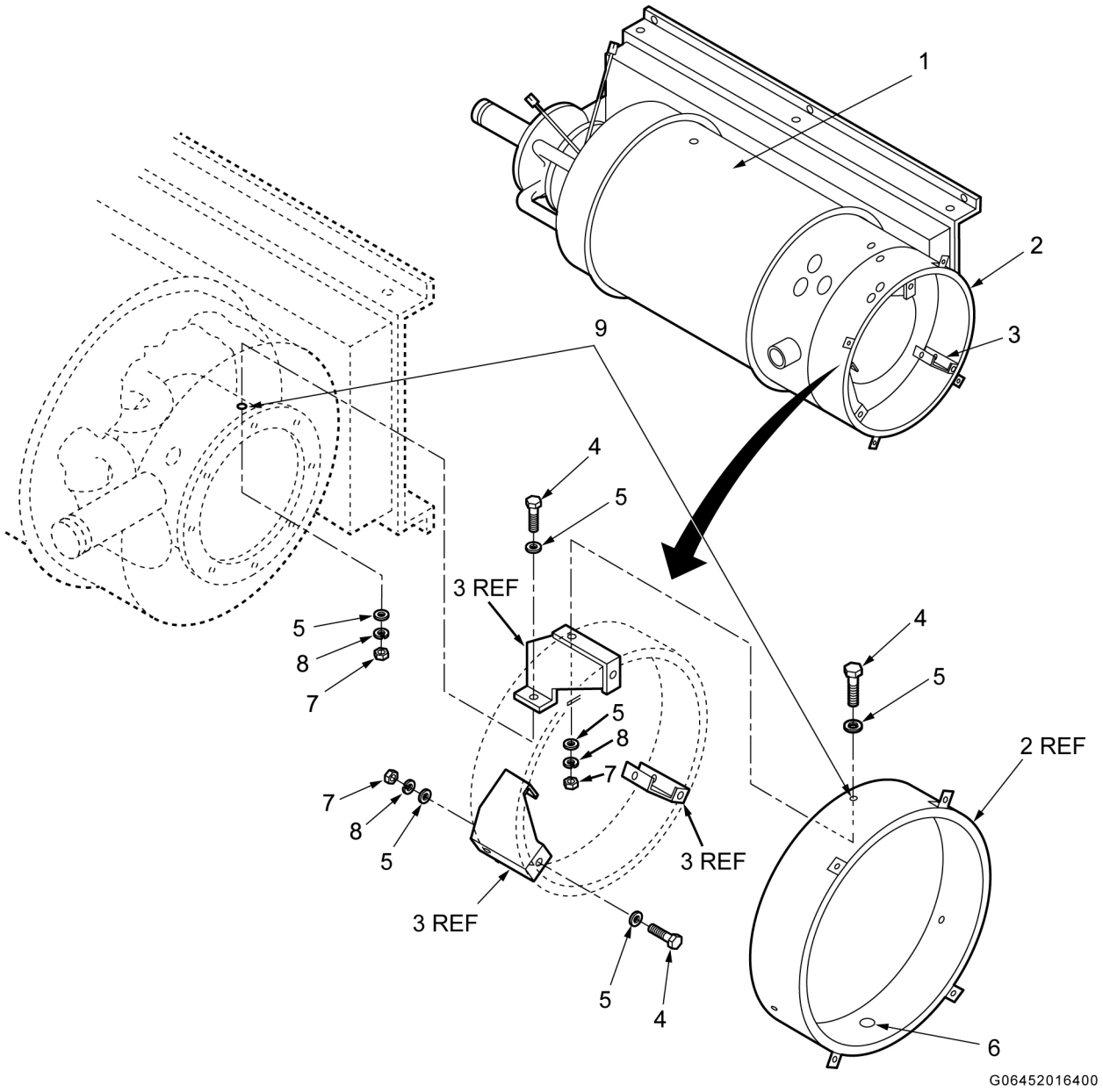


Figure 9. Heat Exchanger (Model H-120) Assembly: Mounting Ring.

Installation

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

WARNING

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

1. With one person properly positioned at the front end of the heat exchanger assembly (Figure 10, Item 8) and another person positioned at the back of the exchanger assembly (Figure 10, Item 9), lift the exchanger assembly and slide it into the ASH frame through the open rear panel, making sure that the front of the exchanger assembly goes in first (Figure 10, Item 5), with the rectangular secondary heat exchanger (Figure 10, Item 6) resting against the left side of the ASH frame.
2. Install the primary brace (Figure 10, Item 10), attaching it to the heat exchanger (Figure 10, Item 7) as follows:
   a. Apply anti-seize compound to the screw (Figure 10, Item 1) and align the hole at the top of the heat exchanger (Figure 10, Item 5) with the tab (Figure 10, Item 4) on the primary brace (Figure 10, Item 10).
   b. With the brace tab and exchanger hole aligned, install the screw (Figure 10, Item 1), new lockwasher (Figure 10, Item 2), and flat washer (Figure 10, Item 3) through the primary brace tab (Figure 10, Item 4) into the hole at the top of the heat exchanger (Figure 10, Item 5). Hand tighten only.

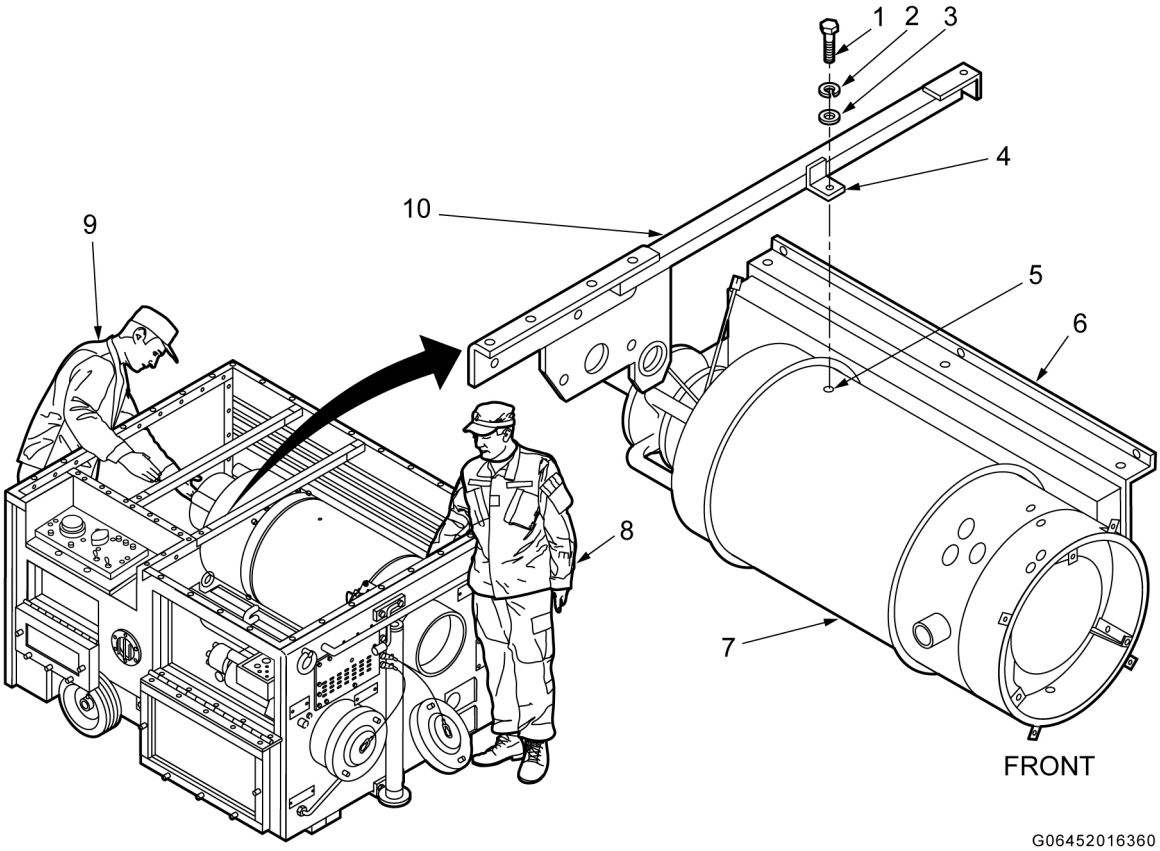


Figure 10. Heat Exchanger (Model H-120) Primary Brace Installation.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

3. Install the primary brace (Figure 11, Item 6) (previously attached to the heat exchanger via the brace tab) in the ASH frame as follows:
   a. Install two flat washers (Figure 11, Item 7), bolt (Figure 11, Item 8), new lockwasher (Figure 11, Item 9) and nut (Figure 11, Item 10) to secure the left end of the primary brace (Figure 11, Item 6) to the ASH frame.
   b. Install two flat washers (Figure 11, Item 16), bolt (Figure 11, Item 19), star lockwasher (Figure 11, Item 18), ground lead (Figure 11, Item 17), new lockwasher (Figure 11, Item 15), and nut (Figure 11, Item 14) to secure the far right end of the primary brace (Figure 11, Item 6) to the ASH frame.
   c. Install two flat washers (Figure 11, Item 11), one bolt (Figure 11, Item 20), one new lockwasher (Figure 11, Item 12) and one nut (Figure 11, Item 13) to secure the mid-right end of the primary brace (Figure 11, Item 6) to the ASH frame.
4. Install four flat washers (Figure 11, Item 3), two bolts (Figure 11, Item 5), two new lockwashers (Figure 11, Item 2), and two nuts (Figure 11, Item 1) to attach the heat exchanger's Y-shaped clamp (Figure 11, Item 21) to the secondary brace (Figure 11, Item 4).

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

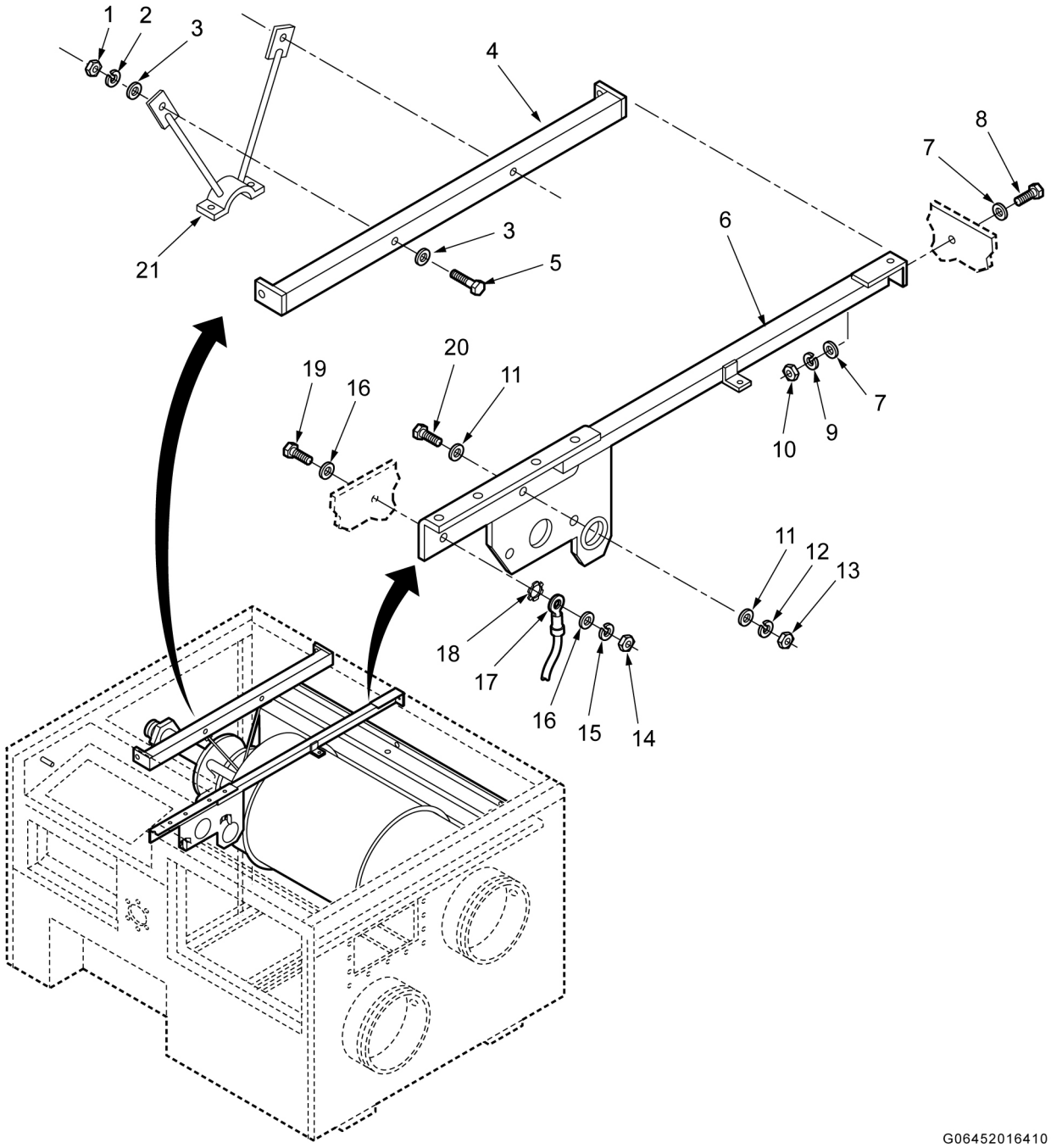


Figure 11. Heat Exchanger (Model H-120) Installation: Primary Brace & Clamp.

5. Apply anti-seize compound to the six screws (\Figure 12, Item 3) in preparation for use on the ASH frame.
6. Install the six flat washers (Figure 12, Item 1), six lockwashers (Figure 12, Item 2), and the six screws (Figure 12, Item 3) to secure the secondary heat exchanger to the left side of the ASH frame. Hand tighten only.
7. Align the mounting ring tab holes on the front of the heat exchanger (Figure 12, Item 13) with the holes on the front of the ASH frame surrounding the air supply outlet (Figure 12, Item 8).

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

8. Install 14 flat washers (Figure 12, Item 9), seven bolts (Figure 12, Item 10), seven new lockwashers (Figure 12, Item 11), and seven nuts (Figure 12, Item 12) to secure the front of the heat exchanger mounting ring (Figure 12, Item 13) to the front of the ASH frame at the air supply outlet (Figure 12, Item 8).
9. The heat exchanger is now fastened to the ASH frame via the two braces, the side fasteners, and the mounting ring. Return to check the integrity of these connections and tighten securely all hardware previously hand tightened in Steps 2 and 6 above.
10. Apply anti-seize compound to the six screws (Figure 12, Item 5) in preparation for their use on the heat shield.
11. Install the heat shield (Figure 12, Item 4), six flat washers (Figure 12, Item 7), six new lockwashers (Figure 12, Item 6), and six screws (Figure 12, Item 5) to secure the heat shield to the heat exchanger assembly.

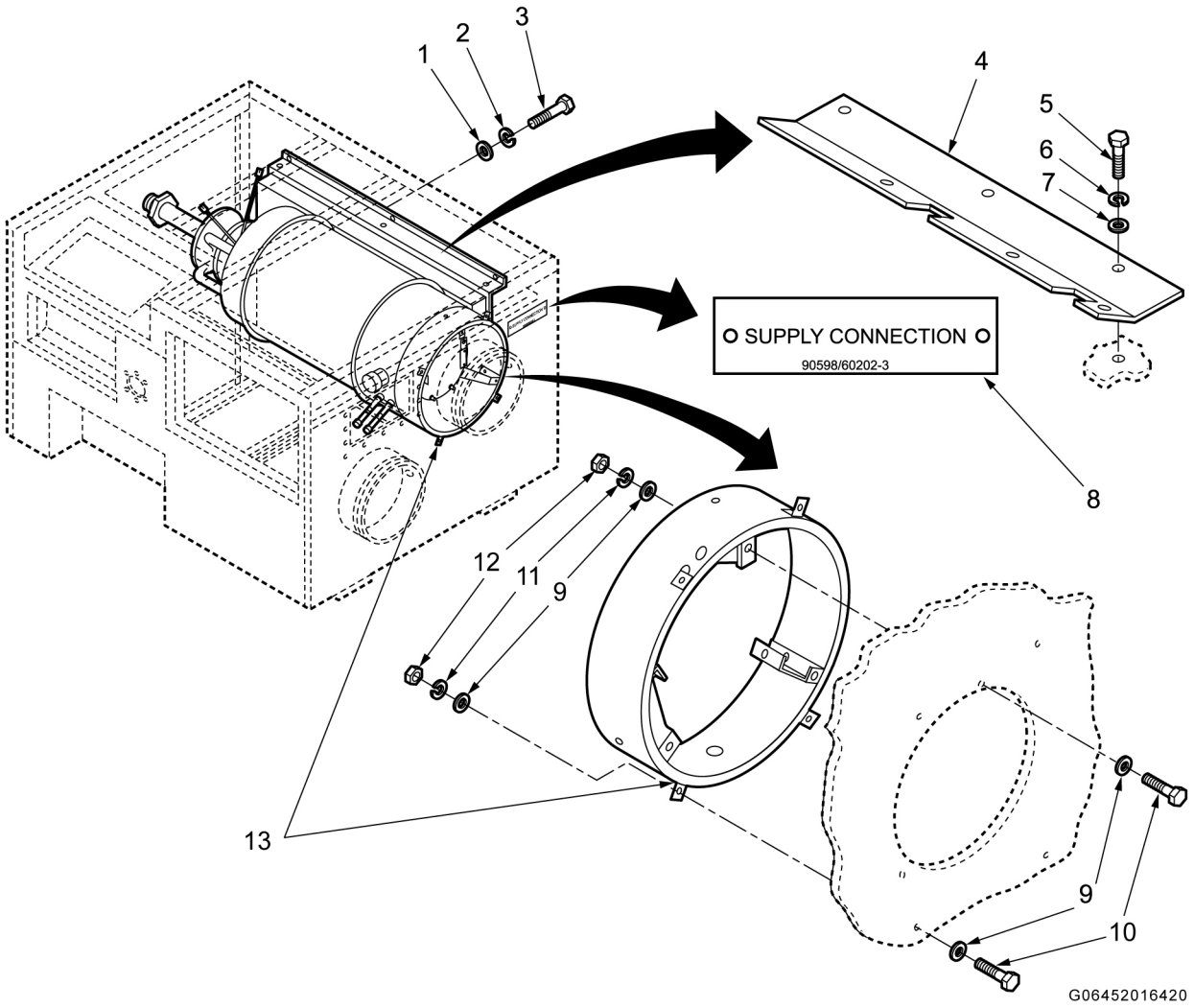


Figure 12. Heat Exchanger (Model H-120) Installation: Mounting Ring & Heat Shield.

12. Tighten securely the four bolts (Figure 13, Item 5) and four nuts (Figure 13, Item 4) that were previously installed (hand tight) on the two clamps (Figure 13, Item 3) on tubes No. 5 and No. 7 in the rear of the heat exchanger.
13. Tighten securely the two bolts (Figure 13, Item 1) and two nuts (Figure 13, Item 9) that were previously installed (hand tight) on the Y-shaped clamp (Figure 13, Item 2) on the back of the heat exchanger.
14. Connect the combustion air supply hose (Figure 13, Item 7) to the exchanger's combustion air intake port (Figure 13, Item 8) and install a clamp (Figure 13, Item 6) to secure the connection.

HEAT EXCHANGER MODEL H-120 REPAIR - (CONTINUED)

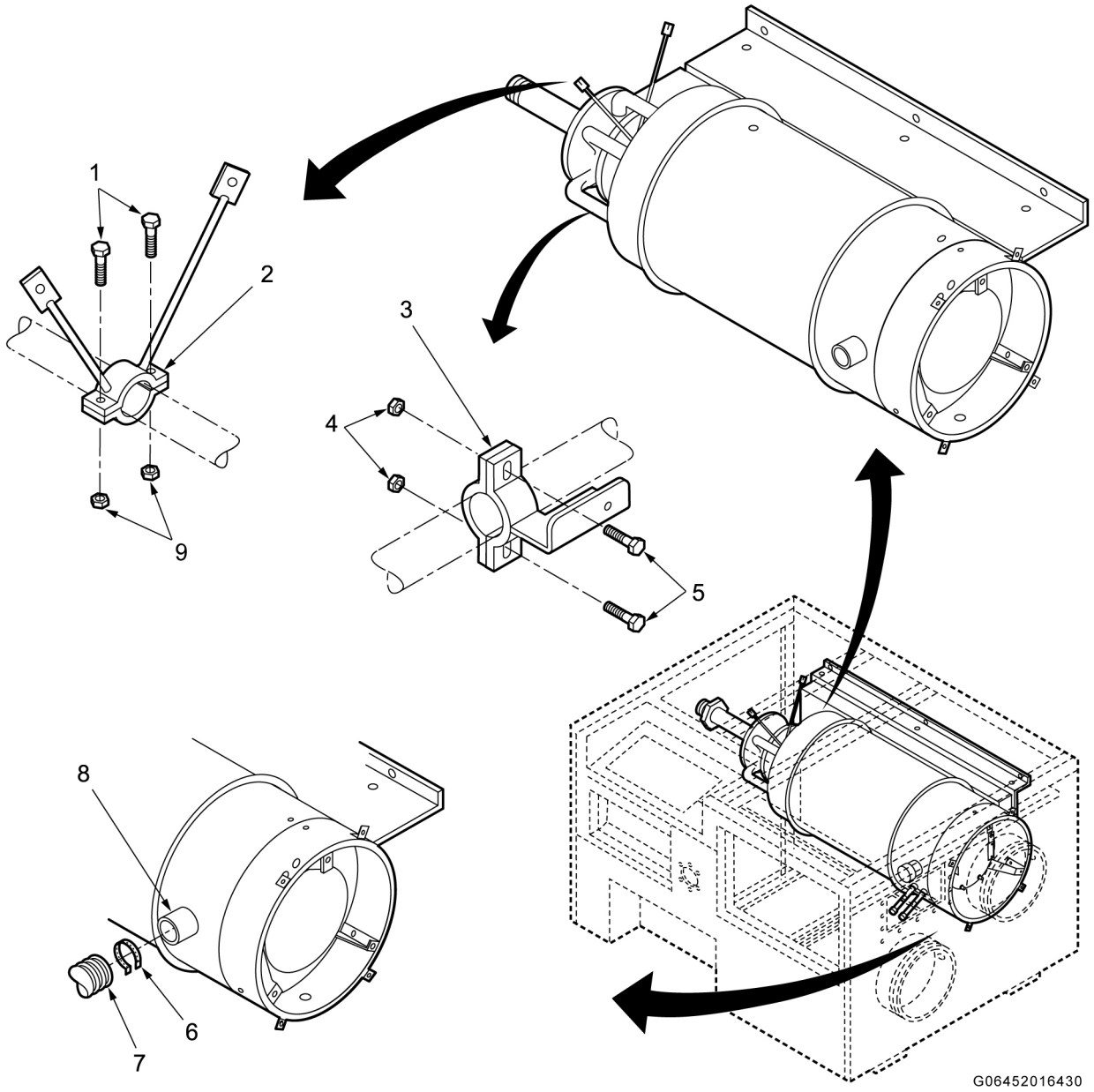


Figure 13. Heat Exchanger (Model H-120) Installation: Hoses & Clamps.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

HEAT EXCHANGER MODEL H-120-1 REPAIR

INITIAL SETUP:

Tools and Special Tools
Gloves, Heat Protective (WP 0116, Item 5)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Anti-Seize Compound (WP 0116, Item 2)
Lockwasher (WP 0100, Figure 25, Item 3)
Straps, Tie-down (WP 0116, Item 14)
Tags Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (2)

Equipment Condition
ASH disconnected from power source
Burner assembly removed, WP 0042
Control box cover removed, WP 0018
Jack assembly removed, WP 0046
Rear panel removed, WP 0020
Supply air duct cover removed, WP 0022
Supply air screen removed, WP 0023
Top panel removed, WP 0019
Transformer assembly removed, WP 0040, WP 0041

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in Figure 1; the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

Insulation should only be removed when necessary to gain access to another component or when replacement of the insulation is necessary.

HEAT EXCHANGER (MODEL H-120-1) REPAIR

Removal

A precondition for the removal of the heat exchanger assembly from the ASH frame is the removal of the ASH's top and rear panels to provide access since the exchanger will be removed from the ASH in that direction. Refer to WP 0019 and WP 0020 for instructions on the proper method of removing the top and rear panels, respectively.

There are two braces that are referred to in this procedure that form the top of the ASH frame. To distinguish between them, the center brace that attaches to the heat exchanger shell will be referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace will be referred to as the secondary brace and is located closer to the rear of the exchanger housing the sight glass. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and affixed to the ASH frame during the entire procedure.

These primary and secondary braces, along with the heat exchanger's other major structural components, are highlighted in the overview of the heat exchanger assembly provided by Figure 1.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

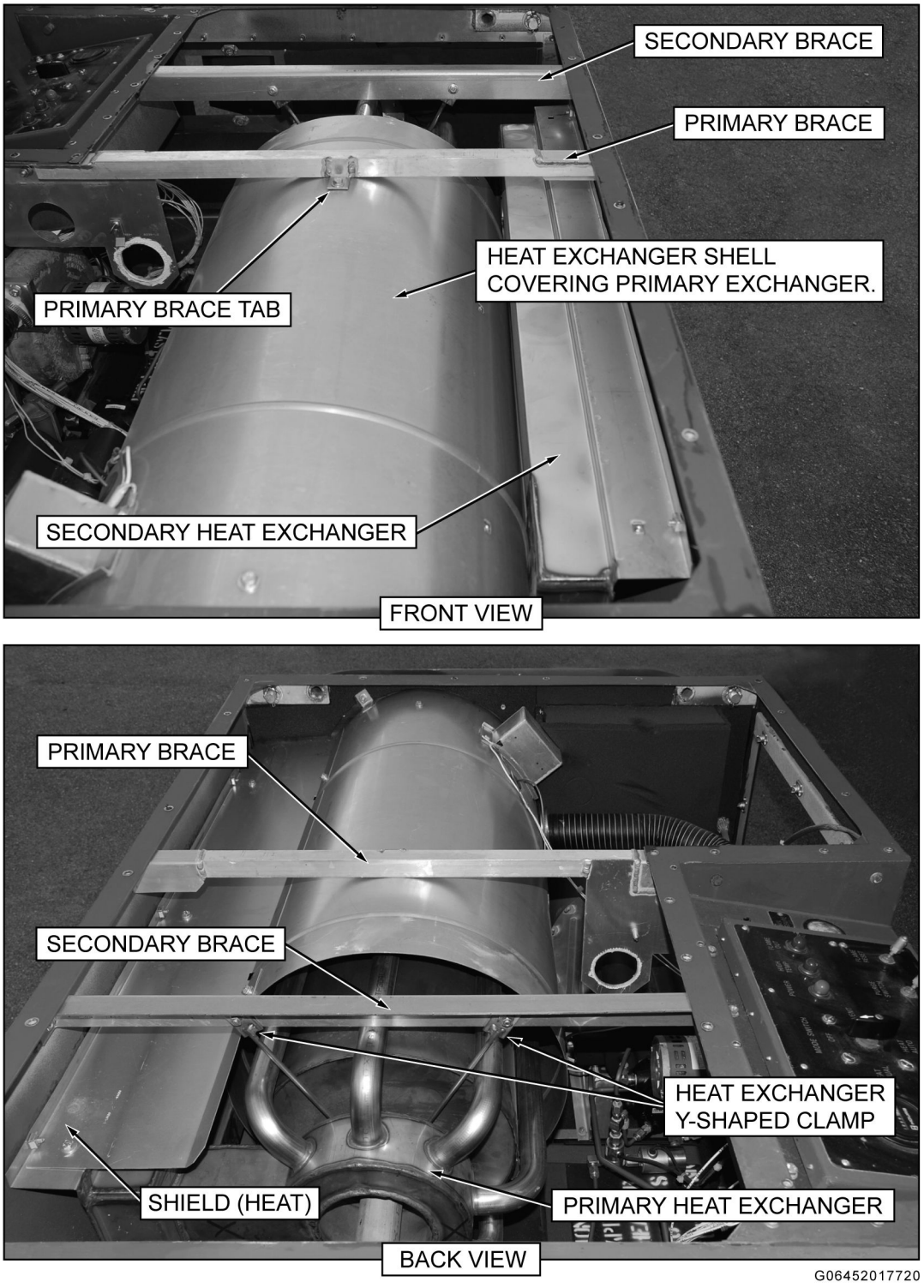


Figure 1. Heat Exchanger (Model H-120-1) Overview of Structural Components.

1. Loosen the clamp (Figure 2, Item 12) and remove the air supply hose (Figure 2, Item 13) from the heat exchanger's combustion air intake port (Figure 2, Item 14).

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

2. Remove six screws (Figure 2, Item 5), six lockwashers (Figure 2, Item 6), and six flat washers (Figure 2, Item 7) from the heat shield (Figure 2, Item 4), which frees the heat shield from the heat exchanger. Discard the lockwashers.
3. Remove the seven nuts (Figure 2, Item 11), seven lockwashers (Figure 2, Item 10), fourteen flat washers (Figure 2, Item 8) and seven bolts (Figure 2, Item 9) fastening the heat exchanger's mounting ring (Figure 2, Item 15) to the ASH frame. The front of the heat exchanger is now free of the ASH frame. Discard the lockwashers.

NOTE

The removal of these seven fasteners from the heat exchanger's mounting ring frees the front of heat exchanger from the ASH frame, but it does not free the mounting ring from the heat exchanger.

4. Remove the six screws (Figure 2, Item 3), six lockwashers (Figure 2, Item 2) and six flat washers (Figure 2, Item 1) that secure the heat exchanger to the left side of the ASH frame. Discard the lockwashers.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

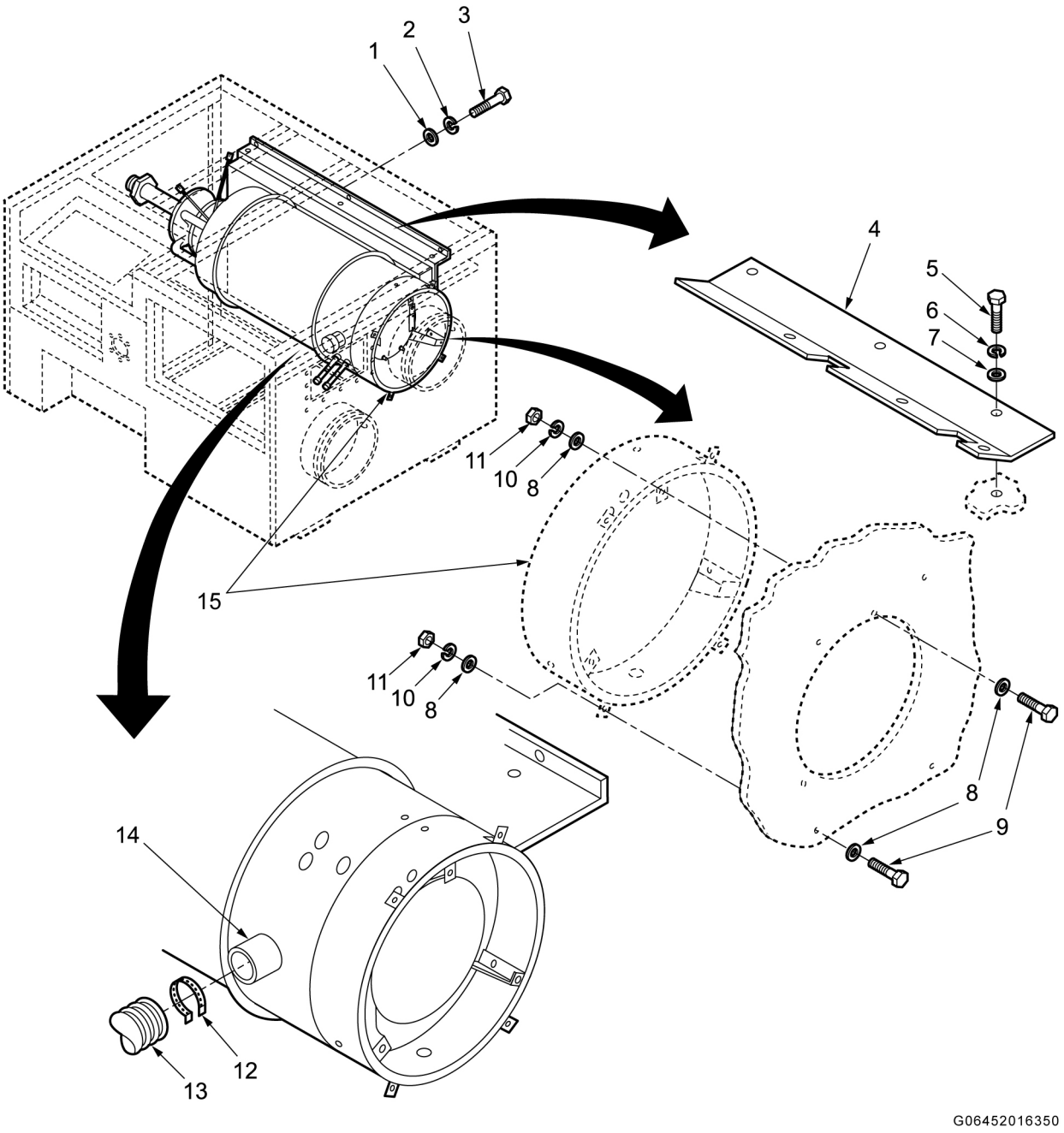


Figure 2. Preparation for Heat Exchanger (Model H-120-1) Removal.

5. Remove the two nuts (Figure 3, Item 1), two lockwashers (Figure 3, Item 2), four flat washers (Figure 3, Item 3) and two bolts (Figure 3, Item 5) that attach the exchanger's Y-shape clamp (Figure 3, Item 21) to the secondary brace (Figure 3, Item 4). Discard the lockwashers.
6. Remove one nut (Figure 3, Item 10), one lockwasher (Figure 3, Item 9), two flat washers (Figure 3, Item 7) and one bolt (Figure 3, Item 8) from the left side of the primary brace (Figure 3, Item 6). Discard the lockwashers.
7. Remove one nut (Figure 3, Item 13), one lockwasher (Figure 3, Item 12), two flat washers (Figure 3, Item 11) and one bolt (Figure 3, Item 20) from the mid-right side of the primary brace (Figure 3, Item 6). Discard the lockwashers.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

8. Remove the one nut (Figure 3, Item 14), one lockwasher (Figure 3, Item 15), two flat washers (Figure 3, Item 16), ground wire (Figure 3, Item 17), star lockwasher (Figure 3, Item 18), and one bolt (Figure 3, Item 19) from the far-right side of the primary brace (Figure 3, Item 6). Discard the lockwashers.
9. The primary brace is no longer fastened to the ASH frame but continues to carry the full weight of the exchanger via the primary brace tab that remains attached to the heat exchanger shell.

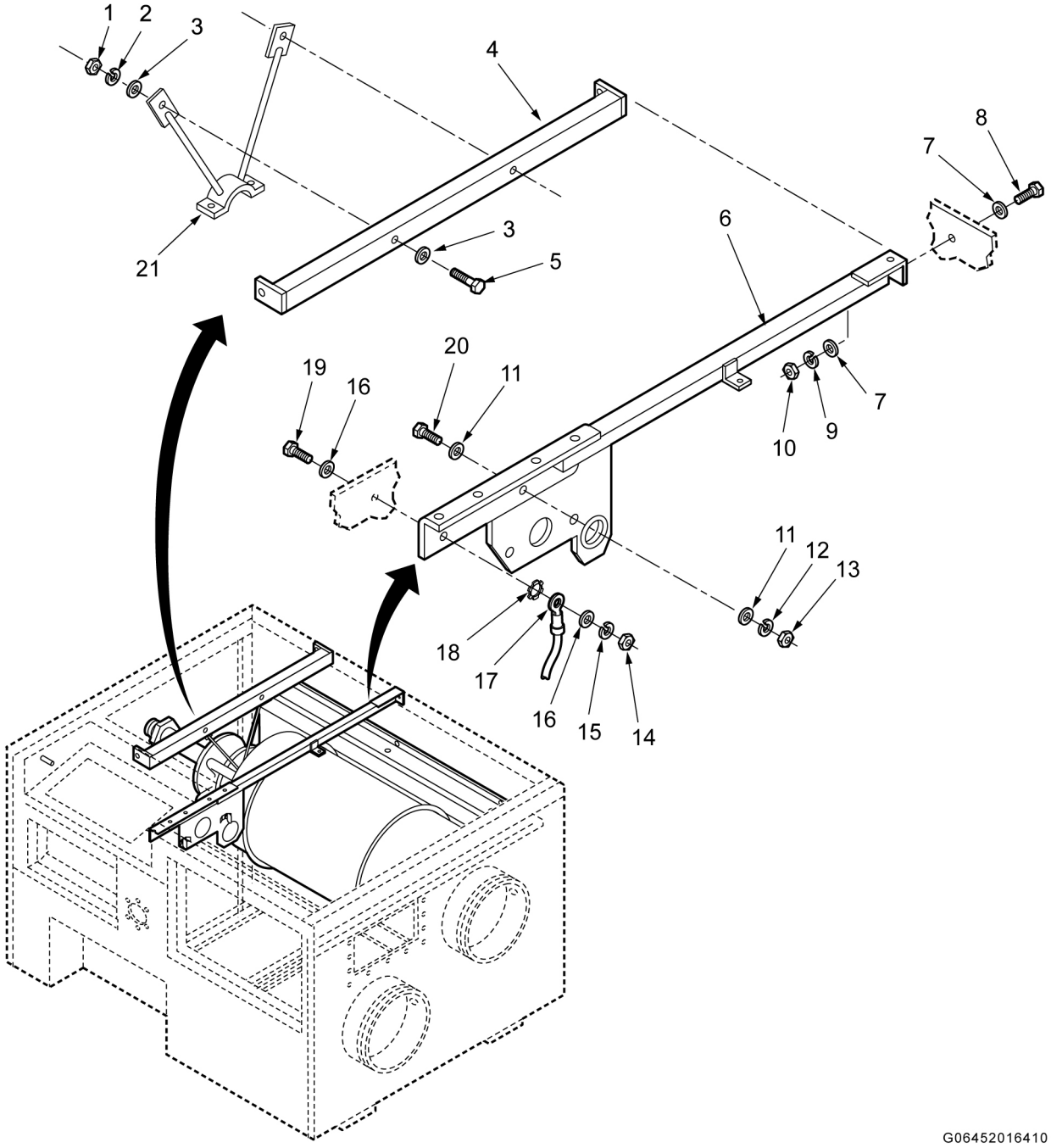


Figure 3. Heat Exchanger (Model H-120-1) Primary Brace Removal.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

WARNING

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

CAUTION

Damage to the heat exchanger will result if the last support screw (Figure 4, Item 1) through the primary brace tab (Figure 4, Item 3) is removed without supporting the assembly. Support the front and rear of the heat exchanger prior to the removal of this fastener.

10. One person shall position himself to support the front end of the heat exchanger (Figure 4, Item 8) while the second person supports the back end of the heat exchanger (Figure 4, Item 9).
11. With the heat exchanger properly supported at both ends, remove the screw (Figure 4, Item 1), lockwasher (Figure 4, Item 2) and flat washer (Figure 4, Item 3) connecting the primary brace tab (Figure 4, Item 4) to the heat exchanger (Figure 4, Item 7)via the hole (Figure 4, Item 5) on top of the heat exchanger. Discard the lockwasher.
12. The primary brace (Figure 4, Item 10) is now free of the exchanger and can be removed from the ASH.
13. Remove the heat exchanger (Figure 4, Item 7) from the ASH by carefully sliding it out through the back of the ASH. Be sure to use two people to safely move the heat exchanger.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

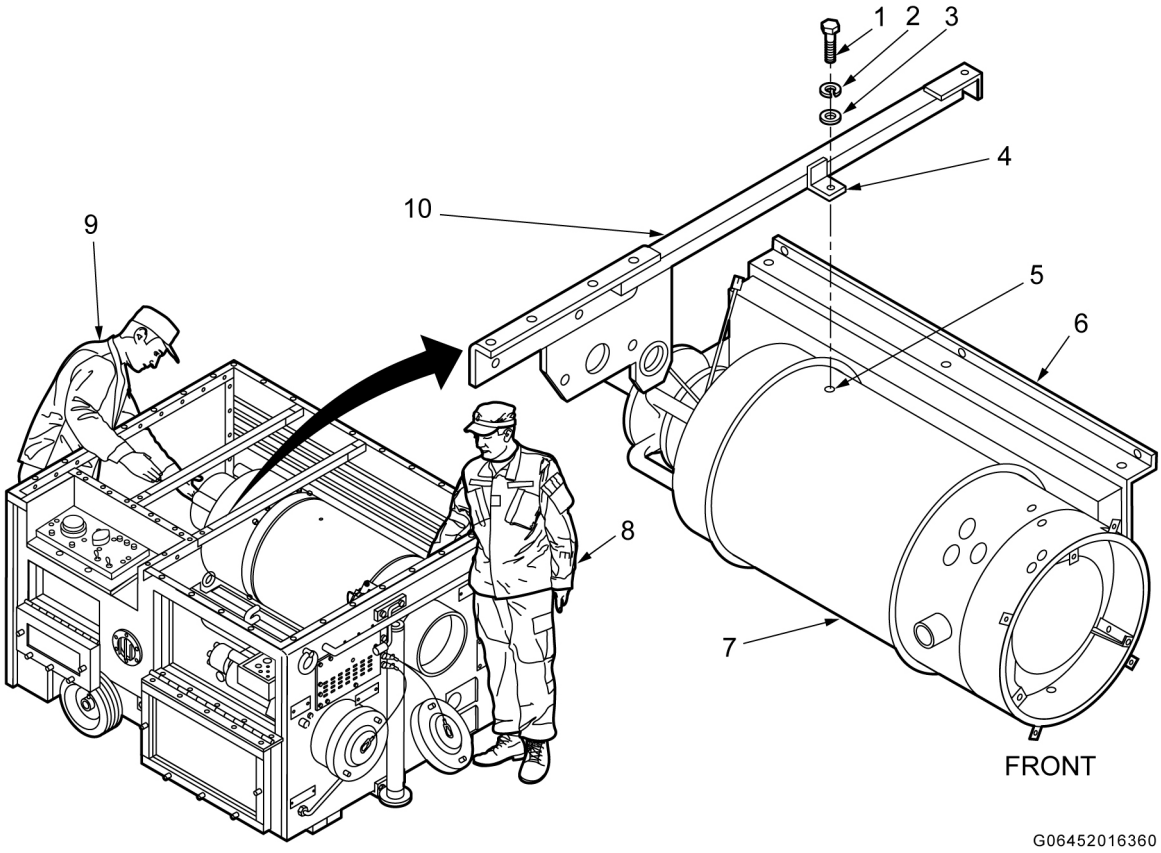


Figure 4. Heat Exchanger (Model H-120-1) Removal/Installation.

Disassembly

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in (Figure 1); the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

1. Remove the six nuts (Figure 5, Item 7), six lockwashers (Figure 5, Item 8), twelve flat washers (Figure 5, Item 5), and six bolts (Figure 5, Item 4) from the three brackets (Figure 5, Item 3) that secure the mounting ring (Figure 5, Item 2) to the heat exchanger (Figure 5, Item 1).
2. Remove the three brackets (Figure 5, Item 3) and mounting ring (Figure 5, Item 2) from the heat exchanger. Discard the lockwashers.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

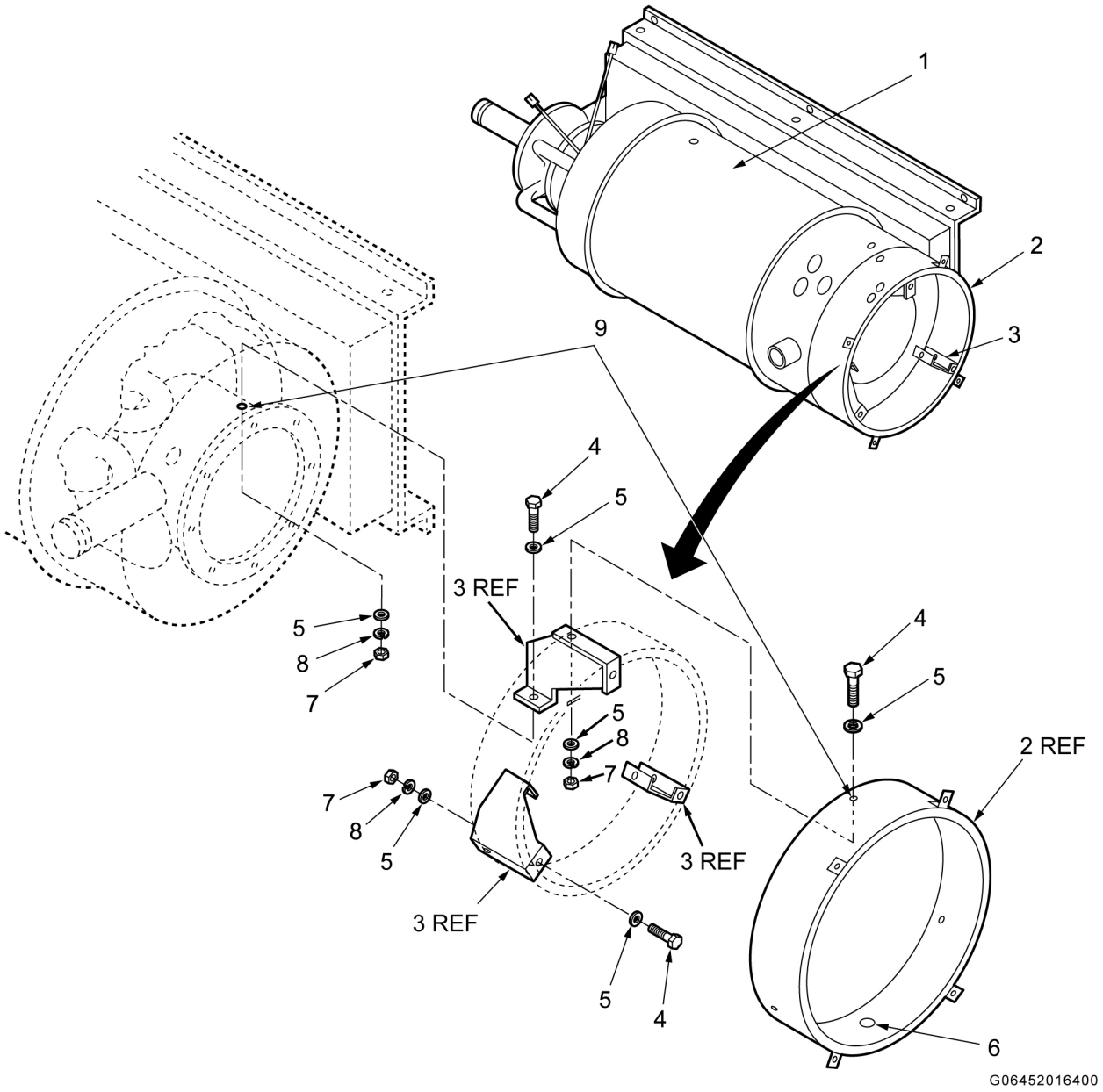


Figure 5. Heat Exchanger (Model H-120-1) Disassembly: Mounting Ring.

3. Remove the six nuts (Figure 6, Item 4), twelve flat washers (Figure 6, Item 2) and six bolts (Figure 6, Item 1) from the two clamps (Figure 6, Item 3) on tubes No. 5 and No. 7 that secure the heat exchanger (Figure 6, Item 5) to the heat exchanger shell (Figure 6, Item 8). Discard the lockwashers.

NOTE

The heat exchanger shell (Figure 6, Item 8) must be tilted to allow clearance for the heat exchanger air inlet pipe (Figure 6, Item 6) when the shell is removed from the heat exchanger assembly.

4. Remove the heat exchanger shell (Figure 6, Item 8) from the heat exchanger (Figure 6, Item 5).

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

5. Remove the two nuts (Figure 6, Item 10), two lockwashers (Figure 6, Item 11), four flat washers (Figure 6, Item 12) and two bolts (Figure 6, Item 13) that fasten the Y-shaped clamp (Figure 6, Item 9) to the heat exchanger. The Y-shaped clamp is now free of the heat exchanger.
   a. Remove the Y-shaped clamp (Figure 6, Item 9) from the heat exchanger.
   b. Discard the lockwashers.
6. Remove the captive nuts (Figure 6, Item 7) from the heat exchanger only if damaged and replacement is required.

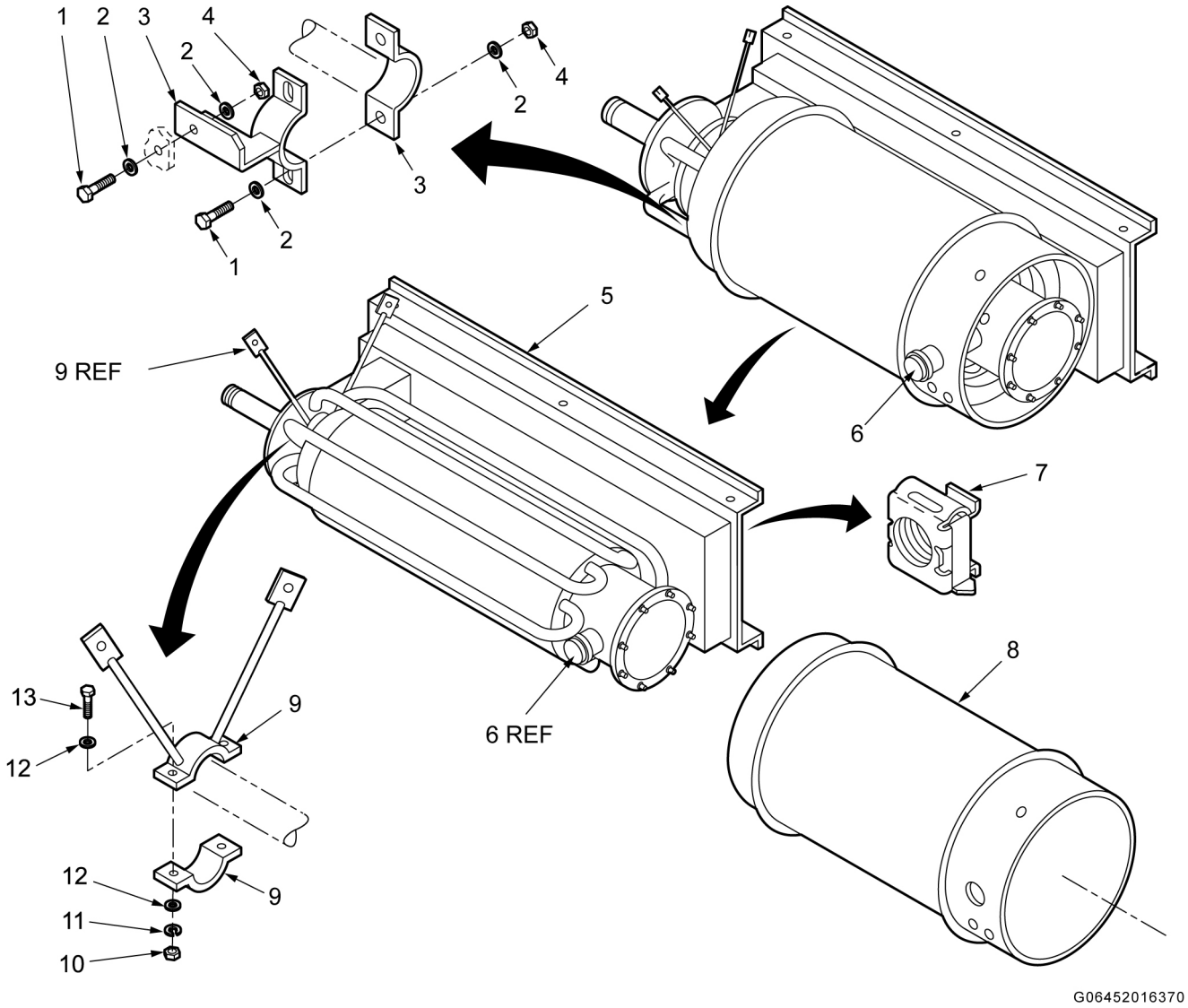


Figure 6. Heat Exchanger (Model H-120-1) Disassembly: Shell & Clamps.

Inspection

1. Inspect all parts for wear, cracks, corrosion, bent or broken terminals.
2. Inspect all hardware for stripped or damaged threads.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

Assembly

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

NOTE

The top tube of the heat exchanger (Figure 7, Item 4), which is tube No. 2, is positioned in between the two top ends of the Y-shaped clamp (Figure 7, Item 3) when the clamp is properly positioned.

1. Install the Y-shaped clamp (Figure 7, Item 2), four flat washers (Figure 7, Item 7), two bolts (Figure 7, Item 1), two new lockwashers (Figure 7, Item 6) and two nuts (Figure 7, Item 5) to secure the Y-shaped clamp to the heat exchanger.
   a. Verify that the clamp is properly positioned as defined in the note above, with tube No. 2 (Figure 7, Item 4), positioned in between the two top ends of the Y-shaped clamp (Figure 7, Item 3).
   b. Tighten clamp hardware hand tight only. Hardware will be securely tightened during the installation of the heat exchanger assembly.

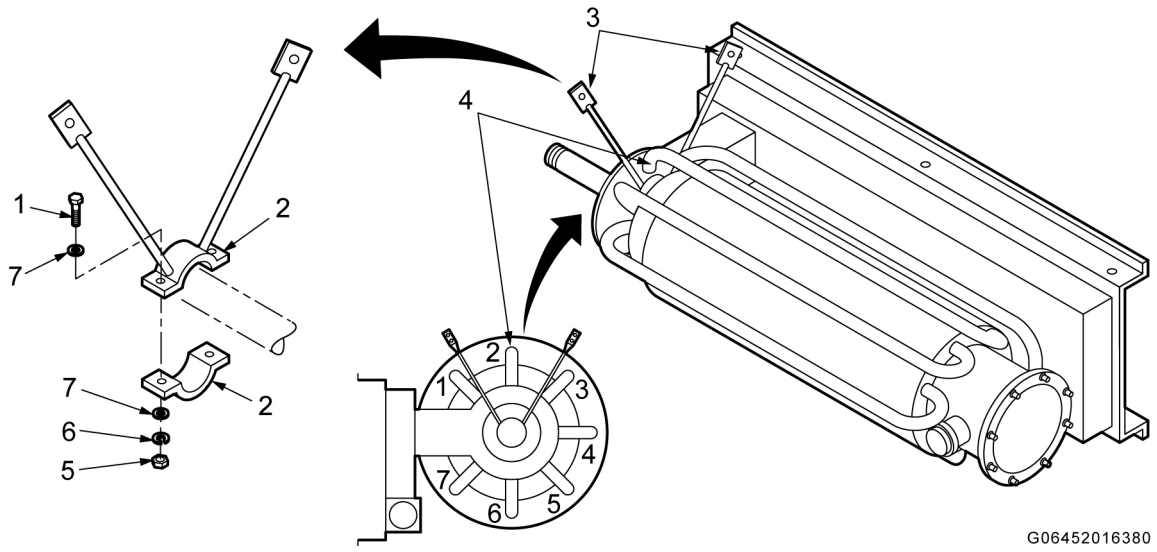


Figure 7. Heat Exchanger (Model H-120-1) Assembly: Clamp.

2. Install any captive nuts (Figure 8, Item 2) on the heat exchanger that were removed during disassembly.
3. Slide the heat exchanger shell (Figure 8, Item 3) onto the heat exchanger (Figure 8, Item 1), being careful to align the air inlet pipe (Figure 8, Item 5) with the large hole in the side of the shell (Figure 8, Item 4).
4. Install two clamps (Figure 8, Item 6) on the back of the heat exchanger (Figure 8, Item 1), one on tube 5, and one on tube 7 (Figure 8, Item 10), to attach the heat exchanger to the shell. Secure the clamps with eight flat washers (Figure 8, Item 8), four bolts (Figure 8, Item 7), and four nuts (Figure 8, Item 9). Tighten all clamp hardware hand tight only. This hardware will be tightened securely during installation of the exchanger assembly.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

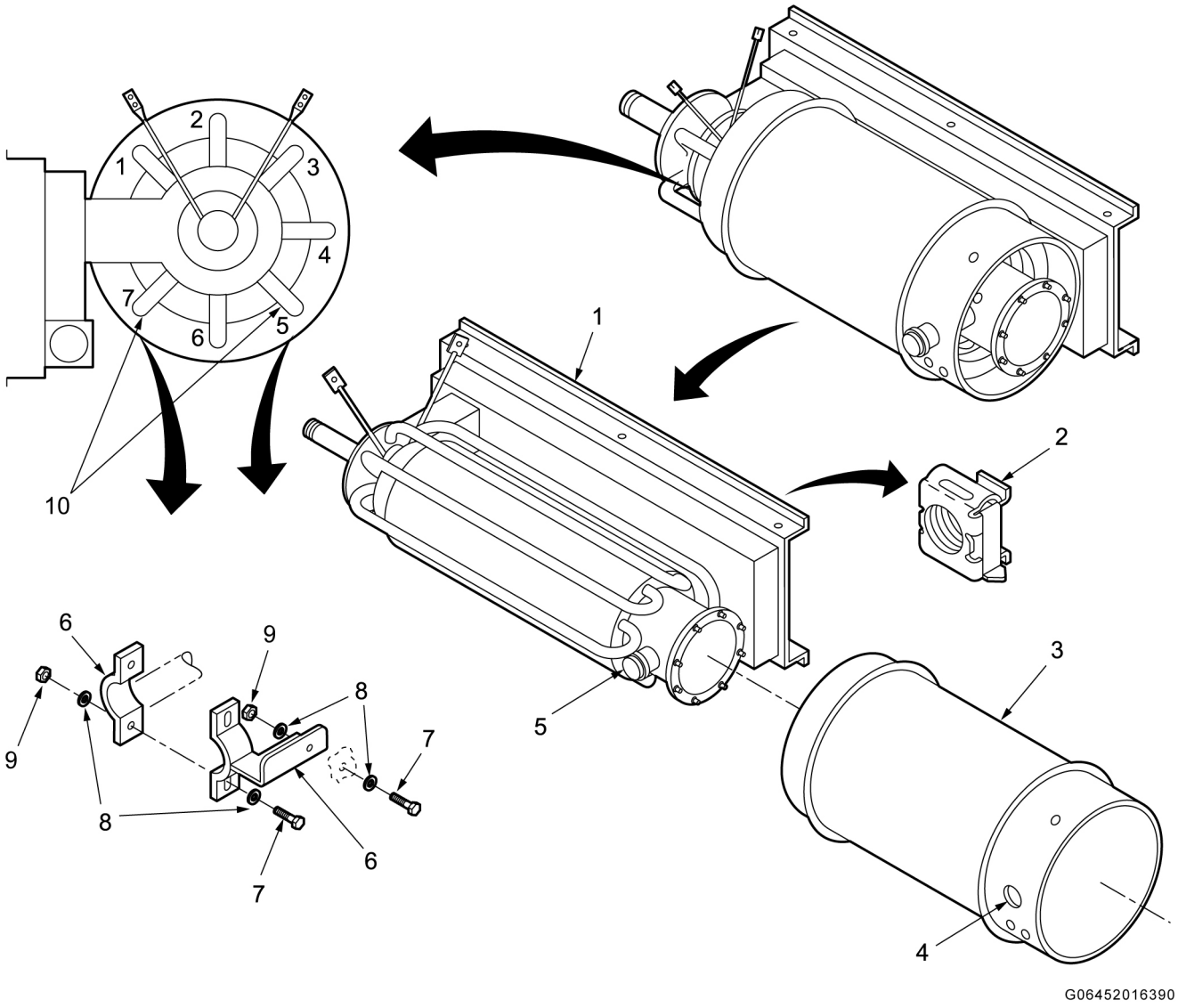


Figure 8. Heat Exchanger (Model H-120-1) Assembly.

5. Slide the mounting ring (Figure 9, Item 2) on the end of heat exchanger shell (Figure 9, Item 1), positioning the larger hole in the ring (Figure 9, Item 6) towards the bottom of the shell.
6. Install the three brackets (Figure 9, Item 3) that attach the mounting ring (Figure 9, Item 2) to the heat exchanger (Figure 9, Item 1), aligning the bracket holes with the holes in the mounting ring and the holes in the exchanger surrounding the burner opening (Figure 9, Item 9); and secure each bracket with four flat washers (Figure 9, Item 5), two bolts (Figure 9, Item 4), two new lockwashers (Figure 9, Item 8) and two nuts (Figure 9, Item 7)).

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

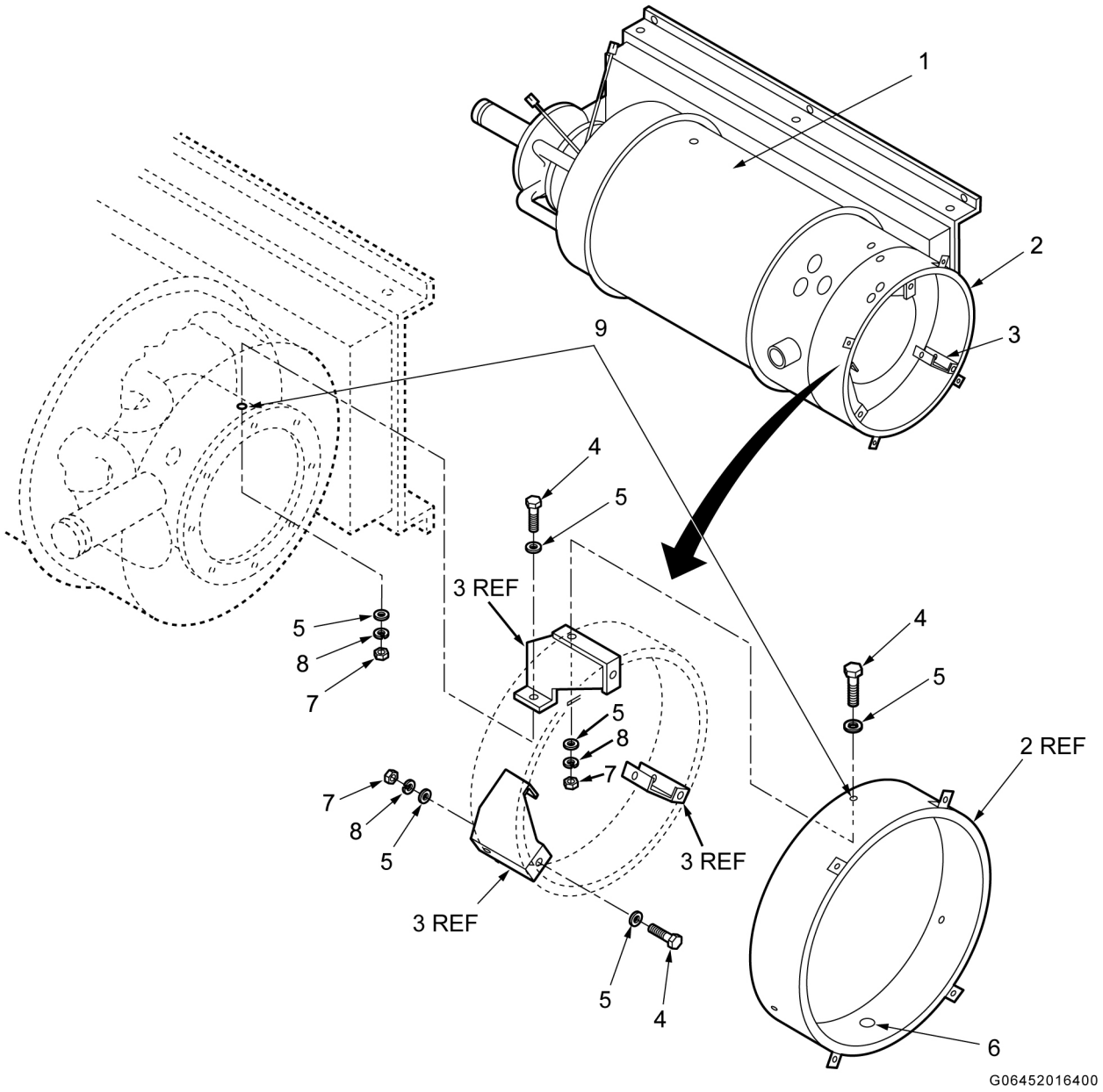


Figure 9. Heat Exchanger (Model H 120-1) Assembly: Mounting Ring.

Installation

WARNING

Edges of sheet metal can be sharp and may cause injury to personnel. Gloves are required when handling the heat exchanger assembly.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

WARNING

Do not attempt to move the heat exchanger alone. The heat exchanger is too long and heavy for one person to handle safely. Two individuals are required to move the heat exchanger assembly.

This work package addresses several tasks involving the heat exchanger assembly. For orientation purposes, the heat exchanger assembly consists of three major components as illustrated in Figure 1; the primary heat exchanger, the secondary heat exchanger, and the heat exchanger shell covering the primary exchanger.

There are two braces that are referred to in this procedure that form the top of the ASH frame. To distinguish between them, the center brace that attaches to the heat exchanger shell will be referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace will be referred to as the secondary brace and is located closer to the rear of the exchanger housing the sight glass. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and affixed to the ASH frame during the entire procedure.

These primary and secondary braces, along with the heat exchanger's other major structural components, are highlighted in the overview of the heat exchanger assembly provided by (Figure 1).

1. With one person properly positioned at the front end of the heat exchanger assembly (Figure 10, Item 8) and another person positioned at the back of the exchanger assembly (Figure 10, Item 9), lift the exchanger assembly and slide it into the ASH frame through the open rear panel, making sure the front of the exchanger assembly goes in first (Figure 10, Item 5), with the rectangular secondary heat exchanger (Figure 10, Item 6) resting against the left side of the ASH frame.
2. Install the primary brace (Figure 10, Item 10), attaching it to the heat exchanger (Figure 10, Item 7) as follows:
   a. Apply anti-seize compound to the screw (Figure 10, Item 1) and align the hole at the top of the heat exchanger (Figure 10, Item 5) with the brace tab (Figure 10, Item 4) on the primary brace (Figure 10, Item 10).
   b. With the brace tab and exchanger hole aligned, install the screw (Figure 10, Item 1), new lockwasher (Figure 10, Item 2), and flat washer (Figure 10, Item 3) through the primary brace tab (Figure 10, Item 4) into the hole at the top of the heat exchanger (Figure 10, Item 5). Hand tighten only.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

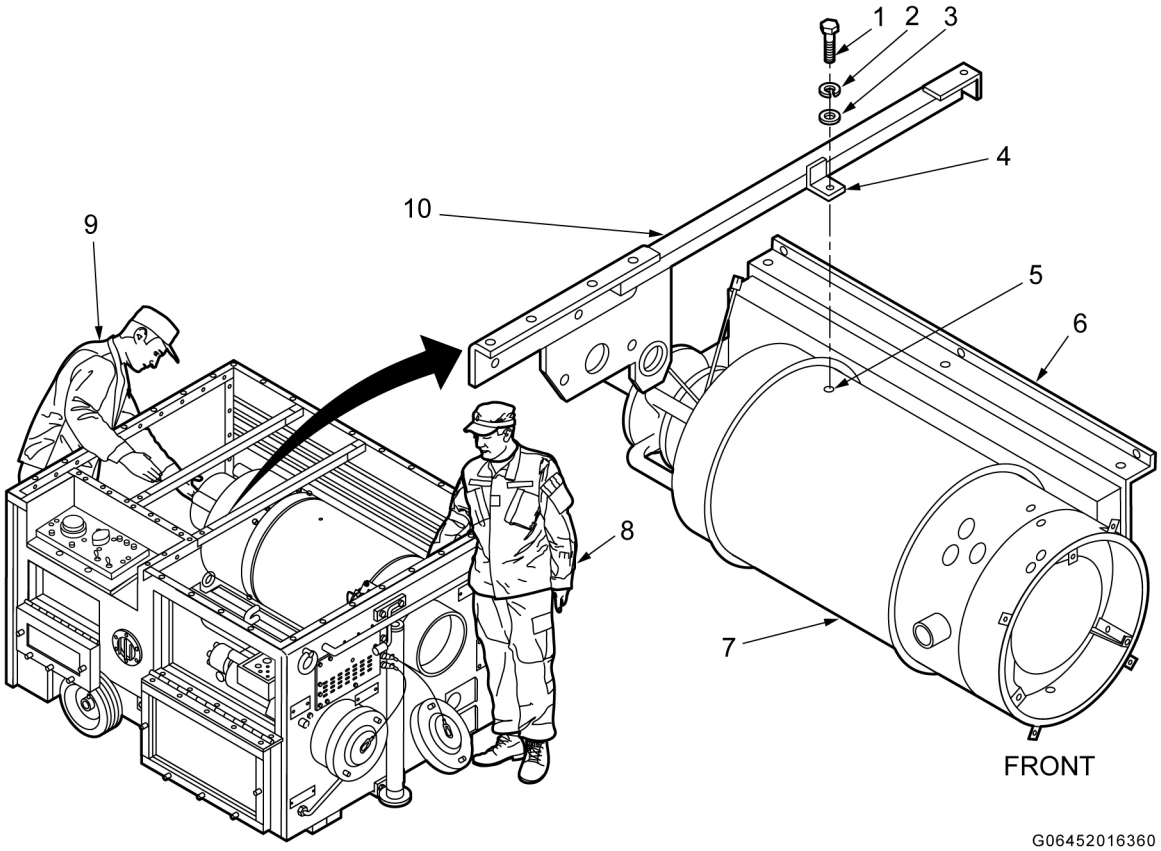


Figure 10. Heat Exchanger (Model H-120-1) Installation: Primary Brace.

3. Install the primary brace (Figure 11, Item 6) (previously attached to the heat exchanger) in the ASH frame as follows:
   a. Install two flat washers (Figure 11, Item 7), bolt (Figure 11, Item 8), new lockwasher (Figure 11, Item 9) and nut (Figure 11, Item 10) to secure the left end of the primary brace (Figure 11, Item 6) to the ASH frame.
   b. Install two flat washers (Figure 11, Item 16), bolt (Figure 11, Item 19), star lockwasher (Figure 11, Item 18), ground lead (Figure 11, Item 17), new lockwasher (Figure 11, Item 15), and nut (Figure 11, Item 14) to secure the far right end of the primary brace (Figure 11, Item 6) to the ASH frame.
   c. Install two flat washers (Figure 11, Item 11), one bolt (Figure 11, Item 20), one new lockwasher (Figure 11, Item 12) and one nut (Figure 11, Item 13) to secure the mid-right end of the primary brace (Figure 11, Item 6) to the ASH frame.
4. Install four flat washers (Figure 11, Item 3), two bolts (Figure 11, Item 5), two new lockwashers (Figure 11, Item 2) and two nuts (Figure 11, Item 1) to attach the heat exchanger's Y-shaped clamp (Figure 11, Item 21) to the secondary brace (Figure 11, Item 4).

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

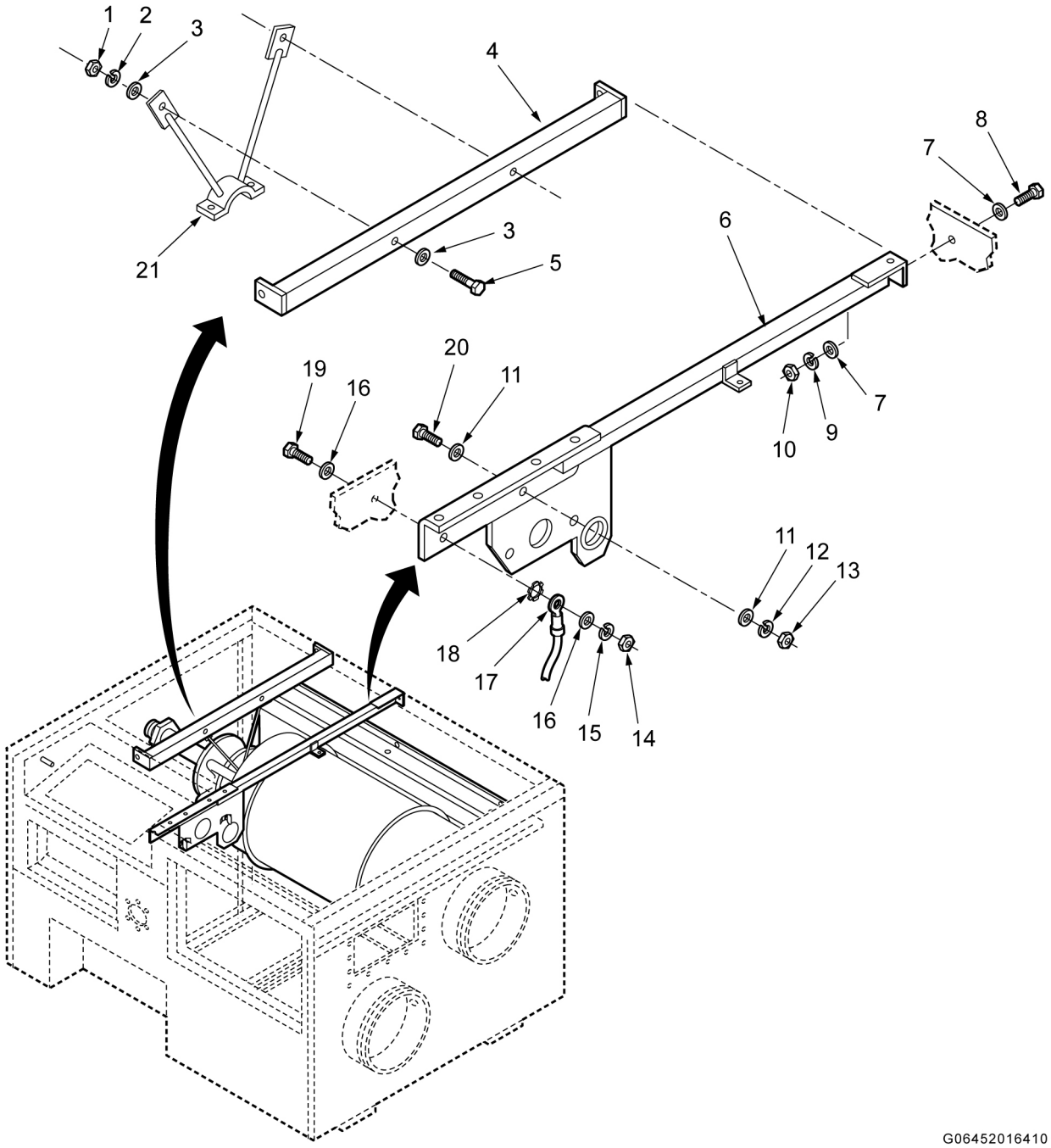


Figure 11. Heat Exchanger (Model H-120-1) Installation: Primary Brace & Clamp.

5. Apply anti-seize compound to the six screws (Figure 12, Item 3) in preparation for use on the ASH frame.
6. Install six flat washers (Figure 12, Item 1), six lockwashers (Figure 12, Item 2), and the six screws (Figure 12, Item 3) to secure the secondary heat exchanger to the left side of the ASH frame. Hand tighten only.
7. Align the mounting ring tabs on the front of the heat exchanger (Figure 12, Item 13) with the holes on the front of the ASH frame surrounding the air supply outlet (Figure 12, Item 8).

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

8. Install 14 flat washers (Figure 12, Item 9), seven bolts (Figure 12, Item 10), seven new lockwashers (Figure 12, Item 11), and seven nuts (Figure 12, Item 12) to secure the front of the heat exchanger mounting ring (Figure 12, Item 13) to the front of the ASH frame at the air supply outlet (Figure 12, Item 8).
9. The heat exchanger is now fastened to the ASH frame via the two braces, the side fasteners, and the mounting ring. Return to check the integrity of these connections and tighten securely all hardware previously hand tightened in Steps 2 and 5 above.
10. Apply anti-seize compound to the six screws (Figure 12, Item 5) in preparation for their use on the heat shield.
11. Install the heat shield (Figure 12, Item 4), six flat washers (Figure 12, Item 7), six new lockwashers (Figure 12, Item 6), and six screws (Figure 12, Item 5) to secure the heat shield to the heat exchanger assembly.

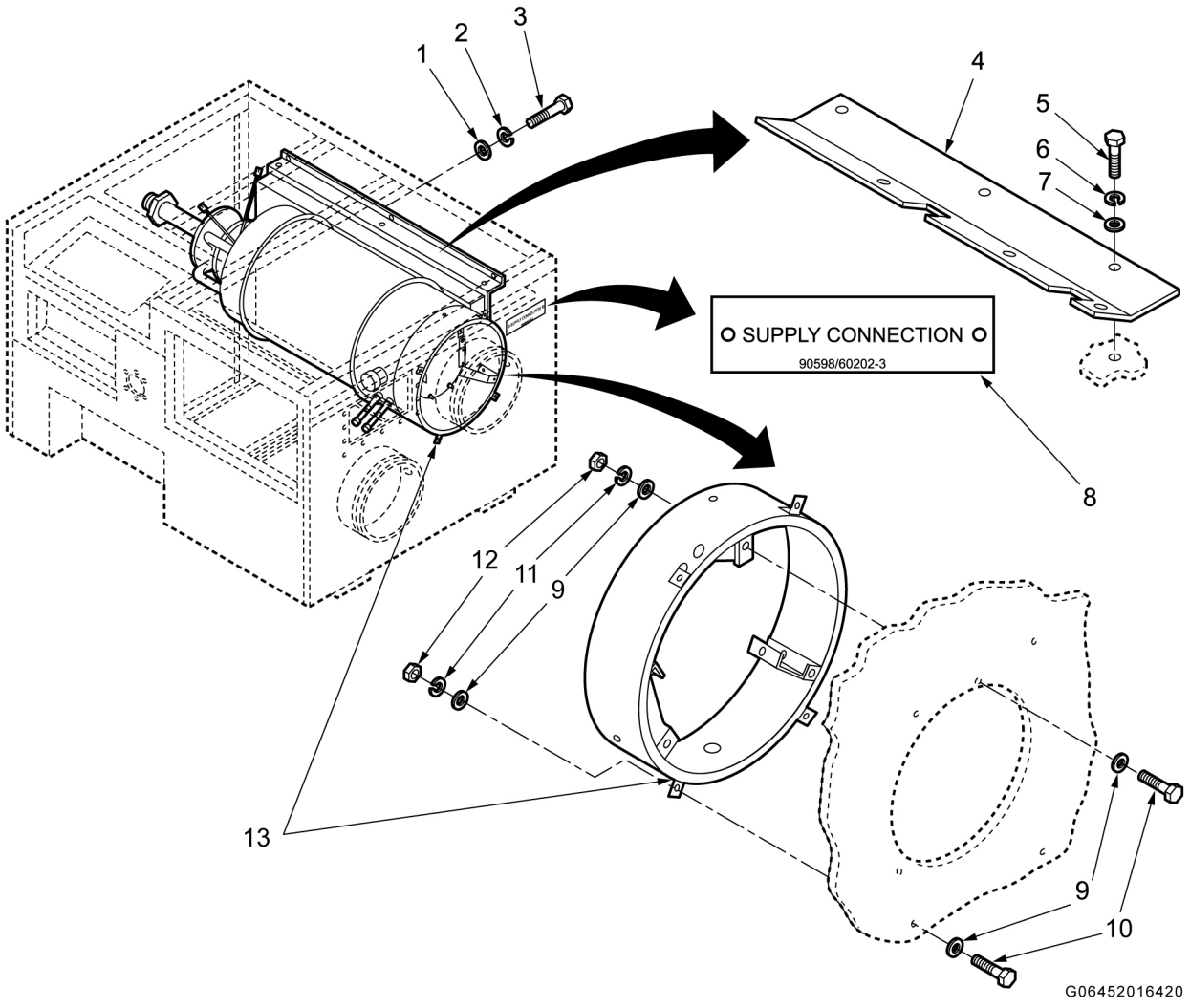


Figure 12. Heat Exchanger (Model H-120-1) Installation: Mounting Ring & Heat Shield.

12. Tighten securely the four bolts (Figure 13, Item 5) and four nuts (Figure 13, Item 4) on the two clamps (Figure 13, Item 3) that were previously installed (hand tight) on tubes No. 5 and No. 7 in the back of the heat exchanger.
13. Tighten securely the two bolts (Figure 13, Item 1) and two nuts (Figure 13, Item 9) that were previously installed (hand tight) on the Y-shaped clamp (Figure 13, Item 2) on the back of the heat exchanger.
14. Connect the combustion air supply hose (Figure 13, Item 7) to the exchanger's combustion air intake port (Figure 13, Item 8) and install a clamp (Figure 13, Item 6) to secure the connection.

HEAT EXCHANGER MODEL H-120-1 REPAIR - (CONTINUED)

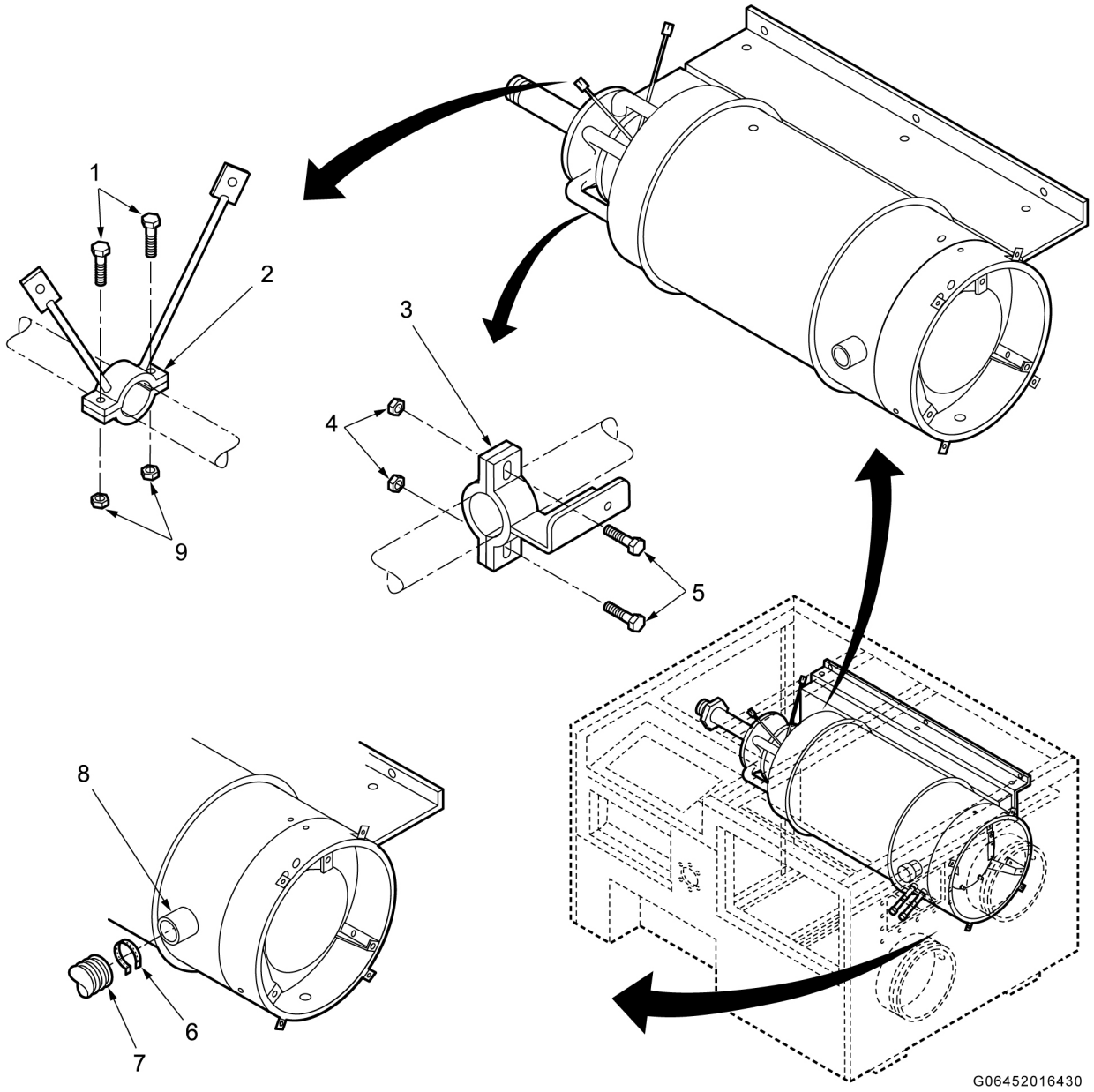


Figure 13. Heat Exchanger (Model H-120-1) Installation: Hoses & Clamps.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

THERMOSTAT ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwasher (WP 0100, Figure 26, Item 2)
Lockwasher (WP 0100, Figure 26, Item 8)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Supply air duct cover removed, WP 0022
Supply outlet screen removed, WP 0023

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

THERMOSTAT ASSEMBLY REPAIR

Removal

1. Open the right-side rear door (Figure 1, Item 17) of the ASH to gain access to the terminal board.
2. Tag and disconnect wires (Figure 1, Item 11), (Figure 1, Item 10), (Figure 1, Item 9), (Figure 1, Item 8) and (Figure 1, Item 7) from terminal board TB3 (Figure 1, Item 16) as follows:
   a. Disconnect wire S2-3 (Figure 1, Item 11) from TB3-9.
   b. Disconnect wire S2-2 (Figure 1, Item 10) from TB3-10.
   c. Disconnect wire S2-1 (Figure 1, Item 9) from TB3-8.
   d. Disconnect wire S3-1 (Figure 1, Item 8) from TB3-4.
   e. Disconnect wire S3-3 (Figure 1, Item 7) from TB3-5.
3. Reconnect any other wires that may have been disconnected at shared terminal points to gain access to the above specified wires.
4. Remove wire tie-down straps (Figure 1, Item 15), as required.

THERMOSTAT ASSEMBLY REPAIR - (CONTINUED)

5. Remove the two nuts (Figure 1, Item 4), two lockwashers (Figure 1, Item 3) and two flat washers (Figure 1, Item 2) that attach the thermostat bracket (Figure 1, Item 5) to the cover plate (Figure 1, Item 1). The removal of these fasteners frees the bracket from the cover plate – with wires still attached. Discard the lockwashers.
6. Remove the bracket carefully since wires remain attached to the bracket via the thermostat and limit switch.
7. Remove the grommet (Figure 1, Item 14) from the hole at the bottom of the heat exchanger mounting ring (Figure 1, Item 13).
8. Remove the wiring harness (Figure 1, Item 6) that passes through this mounting ring orifice (Figure 1, Item 13) to reach the thermostat bracket (Figure 1, Item 5). Note that this wiring harness (Figure 1, Item 6) contains the same five wires (Figure 1, Item 12) disconnected from the terminal board in Step 2 above.

THERMOSTAT ASSEMBLY REPAIR - (CONTINUED)

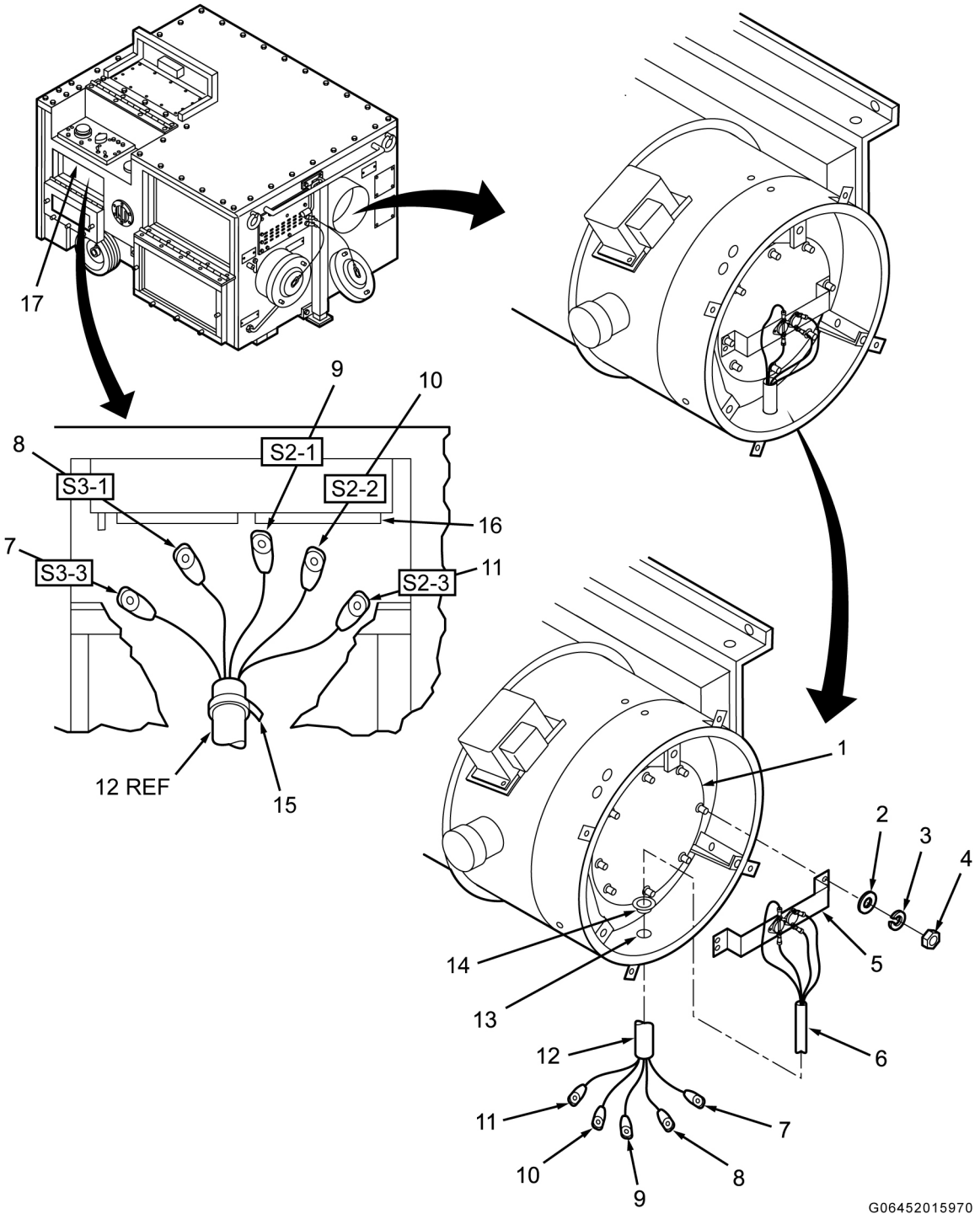


Figure 1. Thermostat Assembly Removal.

Disassembly

1. Tag and disconnect three wires S2-1, S2-2, and S2-3 (Figure 2, Item 8) from the temperature limit switch (Figure 2, Item 5) on the thermostat bracket (Figure 2, Item 4).

THERMOSTAT ASSEMBLY REPAIR - (CONTINUED)

2. Tag and disconnect two wires S3-1 and S3-3 (Figure 2, Item 9) from the discharge air thermostat (Figure 2, Item 7) on the thermostat bracket (Figure 2, Item 4).
3. Remove the three nuts (Figure 2, Item 1), three lockwashers (Figure 2, Item 2), six flat washers (Figure 2, Item 3), and three bolts (Figure 2, Item 6) attaching the temperature limit switch (Figure 2, Item 5) and the discharge air thermostat (Figure 2, Item 7) to the thermostat bracket (Figure 2, Item 4). This frees the limit switch and thermostat to be removed from the bracket. Discard the lockwashers.

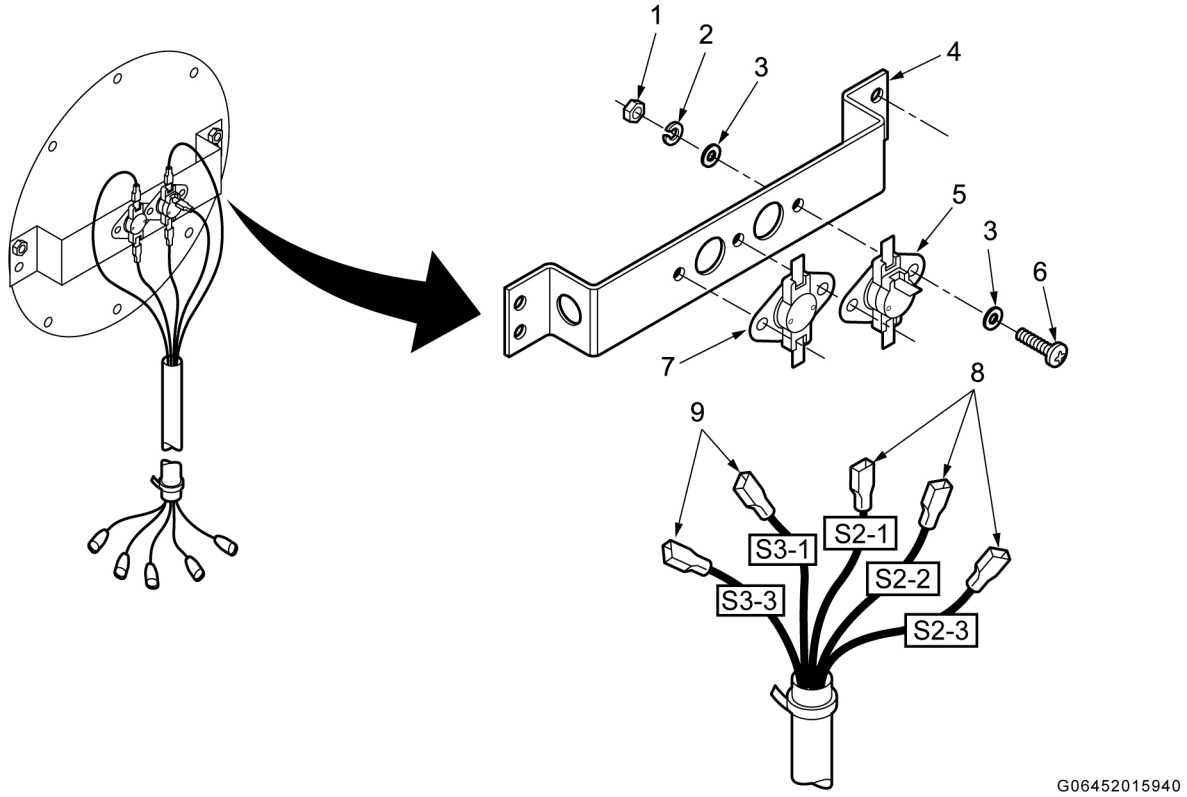


Figure 2. Thermostat Assembly Disassembly.

Repair

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

The repair of the temperature limit switch and the discharge air thermostat is limited to replacement.

The repair procedure outlined below is typical for all wires.

1. If wires are damaged, repair or replace wiring as follows:
   a. Remove wire tie-down strap (Figure 3, Item 1) and insulation sleeve (Figure 3, Item 2).
   b. Repair/replace wire S3-3/TB3-5 (Figure 3, Item 7).
   c. Repair/replace wire S3-1/TB3-4 (Figure 3, Item 6).
   d. Repair/replace wire S2-1/TB3-8 (Figure 3, Item 5).
   e. Repair/replace wire S2-2/TB3-10 (Figure 3, Item 4).
   f. Repair/replace wire S2-3/TB3-9 (Figure 3, Item 3).
   g. Install the insulation sleeve (Figure 3, Item 2) and secure with a wire tie-down strap (Figure 3, Item 1).
2. Repair is typical for all wires.

THERMOSTAT ASSEMBLY REPAIR - (CONTINUED)

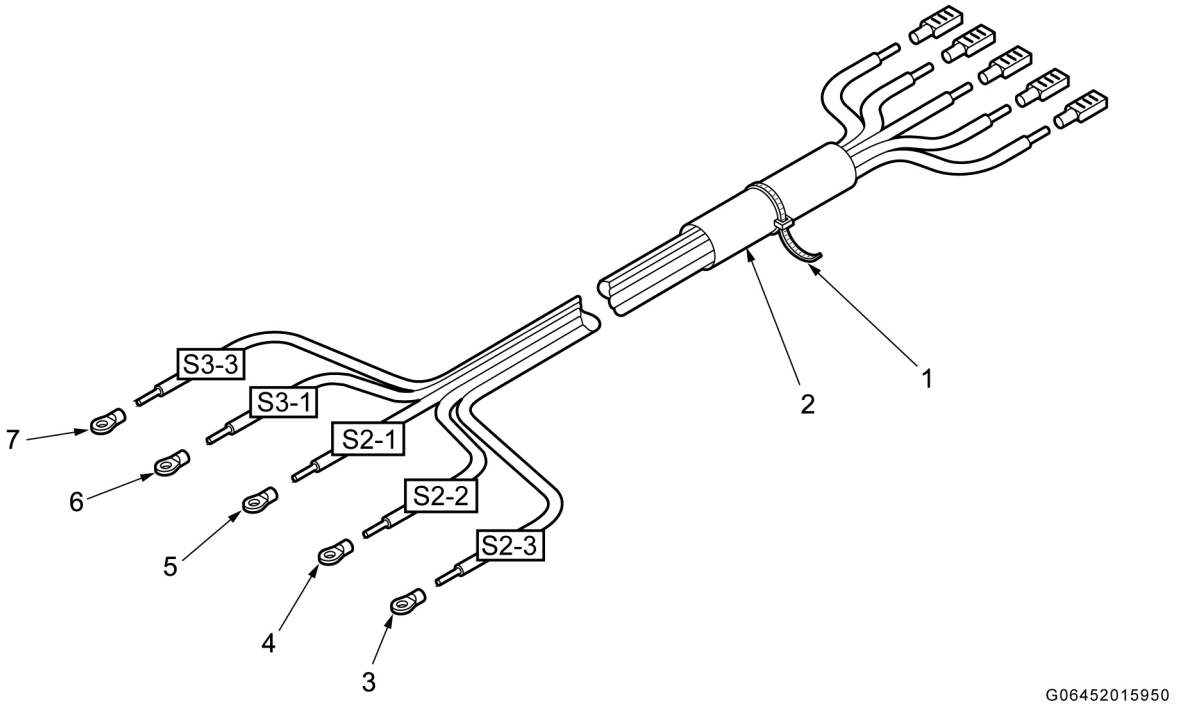


Figure 3. Thermostat Assembly Repair.

Assembly

1. Install the temperature limit switch (Figure 4, Item 5) and the discharge air thermostat (Figure 4, Item 7) on the thermostat bracket (Figure 4, Item 4) and secure with six flat washers (Figure 4, Item 3), three screws (Figure 4, Item 6), three lockwashers (Figure 4, Item 2) and three nuts (Figure 4, Item 1).
   a. Ensure that the temperature limit switch (Figure 4, Item 5) is installed on the right side of the bracket with terminal S2-1 toward the top of the bracket.
   b. Ensure that the discharge air thermostat (Figure 4, Item 7) is installed on the left side of the bracket with terminal S3-1 toward the top of the bracket.
2. Connect wires (Figure 4, Item 12), (Figure 4, Item 11), (Figure 4, Item 10), (Figure 4, Item 9), and (Figure 4, Item 8) to the temperature limit switch (TLS) (Figure 4, Item 5) and the discharge air thermostat (DAT) (Figure 4, Item 7) as follows:
   a. Connect quick-disconnect end wire S3-3/TB3-5 (Figure 4, Item 12) to DAT connection point S3-3.
   b. Connect quick-disconnect end wire S3-1/TB3-4 (Figure 4, Item 11) to DAT connection point S3-1.
   c. Connect quick-disconnect end wire S2-1/TB3-8 (Figure 4, Item 10) to TLS connection point S2-1.
   d. Connect quick-disconnect end wire S2-2/TB3-10 (Figure 4, Item 9) to TLS connection point S2-2.
   e. Connect quick-disconnect end wire S2-3/TB3-9 (Figure 4, Item 8) to TLS connection point S2-3.

THERMOSTAT ASSEMBLY REPAIR - (CONTINUED)

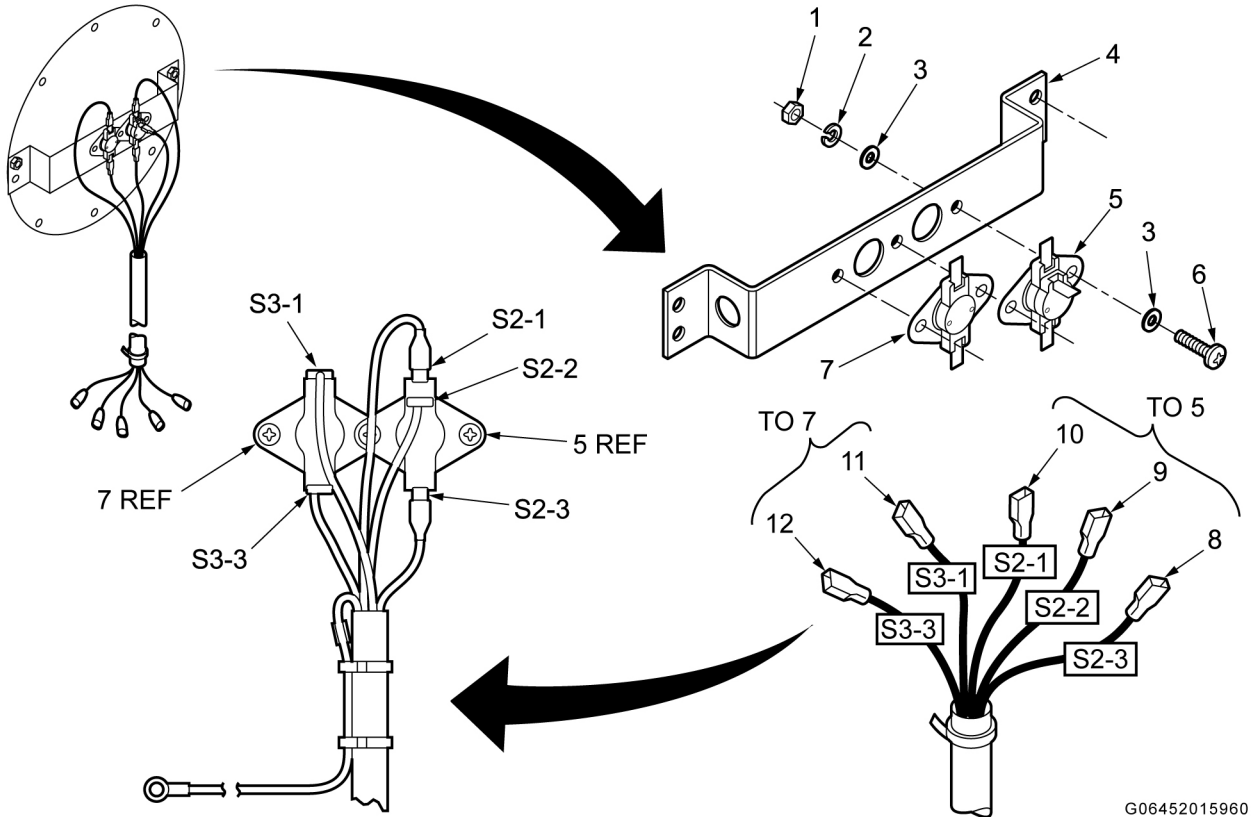


Figure 4. Thermostat Assembly Assembly.

Installation

1. Install the grommet (Figure 5, Item 14) in the hole at the bottom of the mounting ring (Figure 5, Item 13).
2. Insert wiring harness (Figure 5, Item 6), consisting of wires (Figure 5, Item 7), (Figure 5, Item 8), (Figure 5, Item 9), (Figure 5, Item 10), and (Figure 5, Item 11), through the grommet (Figure 5, Item 14) in the bottom of the mounting ring.

NOTE

Mount the thermostat bracket using appropriate bracket holes and cover plate studs that allow the bracket to be parallel to the base of the ASH. Typically, this will best be achieved by mounting the bracket using the cover plate studs at the 3 o'clock and the 9 o'clock positions.

3. Install the bracket (Figure 5, Item 5), two flat washers (Figure 5, Item 2), two lockwashers (Figure 5, Item 3), and two nuts (Figure 5, Item 4) on the cover plate (Figure 5, Item 1), ensuring that the bottom of the bracket is parallel to the base of the ASH.
4. Connect wiring harness (Figure 5, Item 12), consisting of wires (Figure 5, Item 7), (Figure 5, Item 8), (Figure 5, Item 9), (Figure 5, Item 10), and (Figure 5, Item 11), to the terminal board TB3 (Figure 5, Item 16) as follows:
   a. Connect DAT wire S3-3 (Figure 5, Item 7) to TB3-5.
   b. Connect DAT wire S3-1 (Figure 5, Item 8) to TB3-4.
   c. Connect TLS wire S2-1 (Figure 5, Item 9) to TB3-8.
   d. Connect TLS wire S2-2 (Figure 5, Item 10) to TB3-10.
   e. Connect TLS wire S2-3 (Figure 5, Item 11) to TB3-9.
5. Install wire tie-down straps (Figure 5, Item 15), as required.
6. Close the right-side rear door (Figure 5, Item 17) on the ASH.

THERMOSTAT ASSEMBLY REPAIR - (CONTINUED)

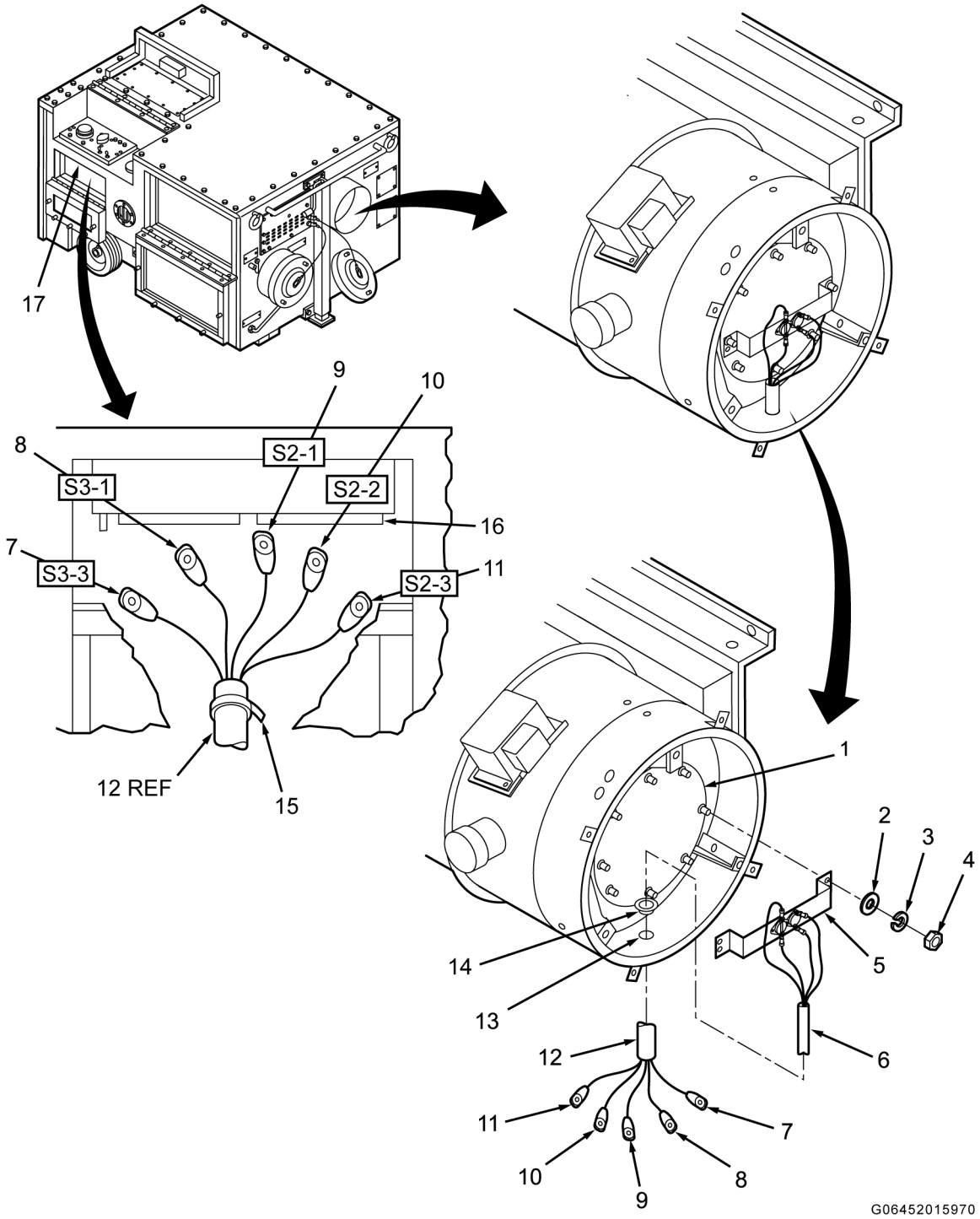


Figure 5. Thermostat Assembly Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TRANSFORMER ASSEMBLY (MODEL H-120) REPAIR

INITIAL SETUP:

Tools and Special Tools
Heat Gun (Shop Set, Electrical Repair Kit) (WP 0117, Item 15)
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket (WP 0084, Figure 12)
Gasket (WP 0084, Figure 13, Item 1)
Gasket (WP 0084, Figure 13, Item 2)
Heat Shrink Tubing (WP 0118, Item 9)
Lockwasher (WP 0095, Figure 28, Item 3)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Top panel removed, WP 0019
Duct cover removed, WP 0022
Supply outlet screen removed, WP 0023

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

The Model H-120 transformer assembly consists of two components, the transformer and the transformer cover. This transformer assembly model has the filter attached to the side of the cover, as noted in the first illustration (Figure 1, Item 15).

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

TRANSFORMER ASSEMBLY MODEL H-120 REPAIR

Removal

1. Tag and disconnect wire TB1-8/F1-BLK (Figure 1, Item 1) and wire F1-WHT/TB1-3 (Figure 1, Item 2) from Terminal Board 1 (TB1) (Figure 1, Item 23).
2. Remove two nuts (Figure 1, Item 18), two lockwashers (Figure 1, Item 19), two bolts (Figure 1, Item 22), ground wire (Figure 1, Item 21) and two flat washers (Figure 1, Item 20) from the transformer assembly (Figure 1, Item 17). Discard the lockwashers.

TRANSFORMER ASSEMBLY (MODEL H-120) REPAIR - (CONTINUED)

3. Lift the transformer assembly (Figure 1, Item 17) away from the base plate (Figure 1, Item 13), remove the two heat shrink tubes (Figure 1, Item 14) and disconnect the two high-tension leads (Figure 1, Item 11). Discard the heat shrink.
4. Remove the eight nuts (Figure 1, Item 8), eight lockwashers (Figure 1, Item 7), and eight flat washers (Figure 1, Item 6) that fasten the thermostat bracket (Figure 1, Item 5) and cover plate (Figure 1, Item 4) to the heat exchanger. This frees the bracket and cover plate to be removed providing access the transformer's high-tension leads connections. Discard the lockwashers.
5. Remove the gasket (Figure 1, Item 3) from the cover plate (Figure 1, Item 4). Discard the gasket.
6. Disconnect the other end of the two high-tension leads (Figure 1, Item 11) and remove the leads through the transformer base plate (Figure 1, Item 13).
7. Remove the two grommets (Figure 1, Item 12) from the transformer base plate (Figure 1, Item 13) and then remove the transformer base plate.
8. Remove the two shorter shielded gaskets (Figure 1, Item 9) and two longer shielded gaskets (Figure 1, Item 10), as required.

TRANSFORMER ASSEMBLY (MODEL H-120) REPAIR - (CONTINUED)

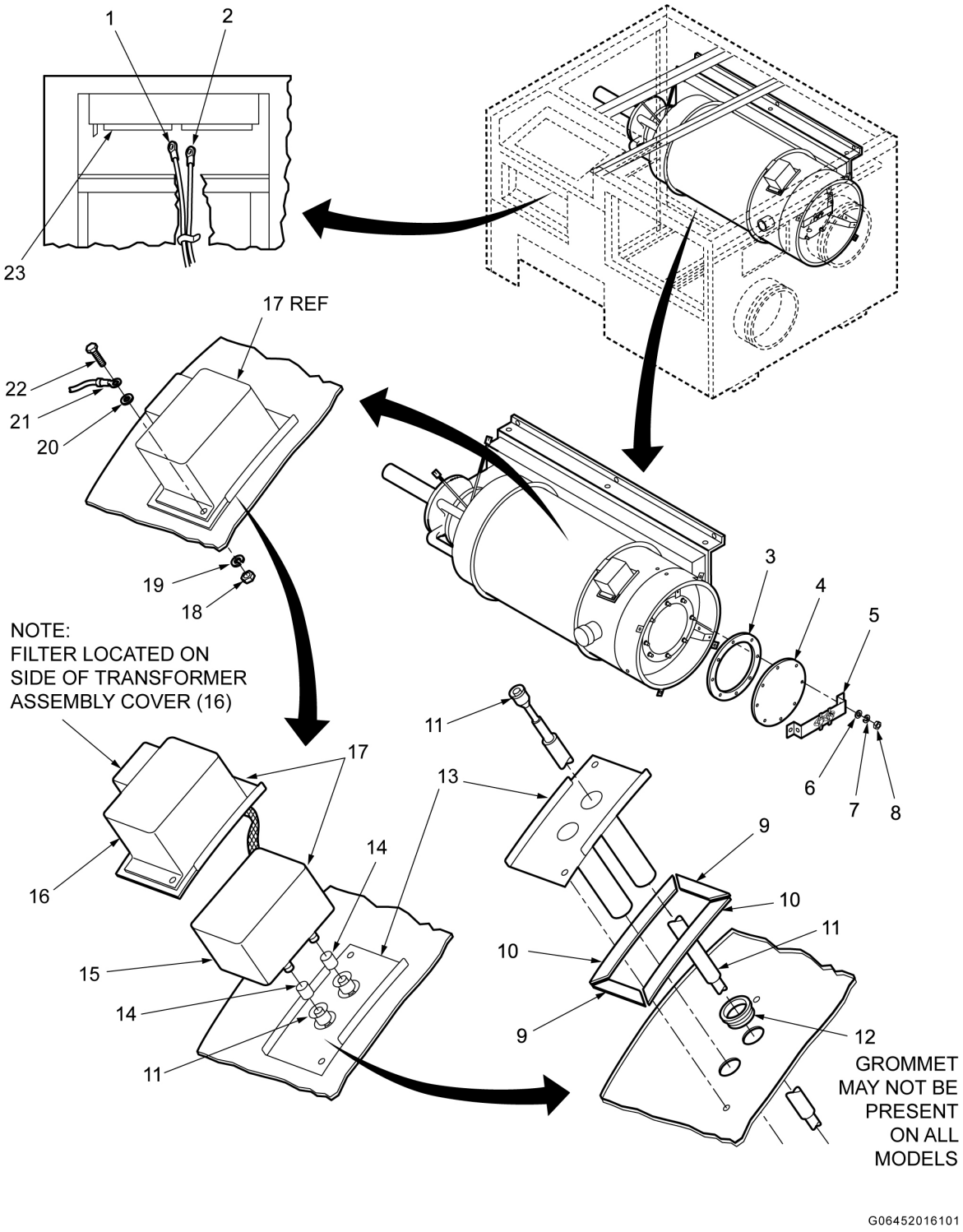


Figure 1. Transformer (Model H-120) Removal.

TRANSFORMER ASSEMBLY (MODEL H-120) REPAIR - (CONTINUED)

Installation

1. Install the two shorter shielded gaskets (Figure 2, Item 3) and the two longer shielded gaskets (Figure 2, Item 4) on the transformer base plate (Figure 2, Item 2); and then position the transformer base plate (Figure 2, Item 2) on the heat exchanger shell.
2. Install the two high-tension leads (Figure 2, Item 1) through the holes provided in the base plate (Figure 2, Item 2) and attach the high-tension leads to the electrodes from the burner assembly (Figure 2, Item 7).
3. Slide the heat shrinks (Figure 2, Item 15) over the high-tension leads (Figure 2, Item 1) and install the two high-tension leads on the transformer (Figure 2, Item 16).
4. Position and secure the heat shrink (Figure 2, Item 15) over the high-tension leads (Figure 2, Item 1) and the connection points on the transformer (Figure 2, Item 16).
5. Position the transformer (Figure 2, Item 16) on the transformer base plate (Figure 2, Item 2); and position the transformer cover (Figure 2, Item 17) on the transformer (Figure 2, Item 16).
6. Secure the transformer assembly (Figure 2, Item 23) to the base plate and heat exchanger shell with two flat washers (Figure 2, Item 20), ground wire (Figure 2, Item 21), two bolts (Figure 2, Item 22), two new lockwashers (Figure 2, Item 19) and two nuts (Figure 2, Item 18).
7. Connect wires F1-BLK/TB1-8 and F1-WHT/TB1-3 (Figure 2, Item 8) to Terminal Block 1 (TB1) (Figure 2, Item 24). Remove marker tags from the wires.
8. Install the two grommets (Figure 2, Item 5) over the two high-tension leads (Figure 2, Item 1) and insert the grommets approximately 1/4 inch into the transformer assembly base plate (Figure 2, Item 2). Cut to fit: the new grommets may have to be cut so they can be installed over the high-tension leads.
9. Position the new gasket (Figure 2, Item 9) on the cover plate (Figure 2, Item 10), aligning the holes on the gasket with the holes on the cover plate; and mount both on the exchanger's 8 studs surrounding the burner assembly (Figure 2, Item 6) opening.
10. With the new gasket and cover plate in position, mount the thermostat bracket (Figure 2, Item 11) on the cover plate (Figure 2, Item 10), using two of the same studs, making sure that the bracket is horizontal to the bottom of the ASH. Typically, best results are achieved using the studs at the 3 o'clock and 9 o'clock position.
11. With these three components (the gasket, the cover plate, and the bracket) properly positioned, install the eight flat washers (Figure 2, Item 12), the eight new lockwashers (Figure 2, Item 13), and the eight nuts (Figure 2, Item 14) on the eight studs surrounding the burner assembly. Tighten sufficiently to hold the assembled components securely in place.

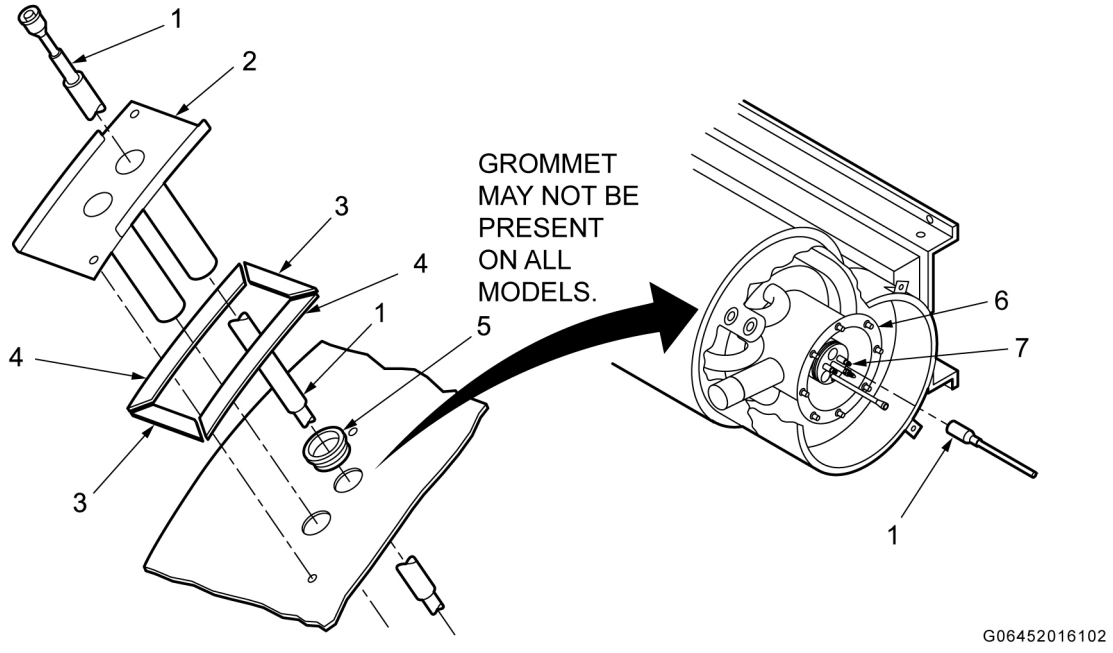


Figure 2. Transformer Model H-120 Installation (Sheet 1 of 2).

TRANSFORMER ASSEMBLY (MODEL H-120) REPAIR - (CONTINUED)

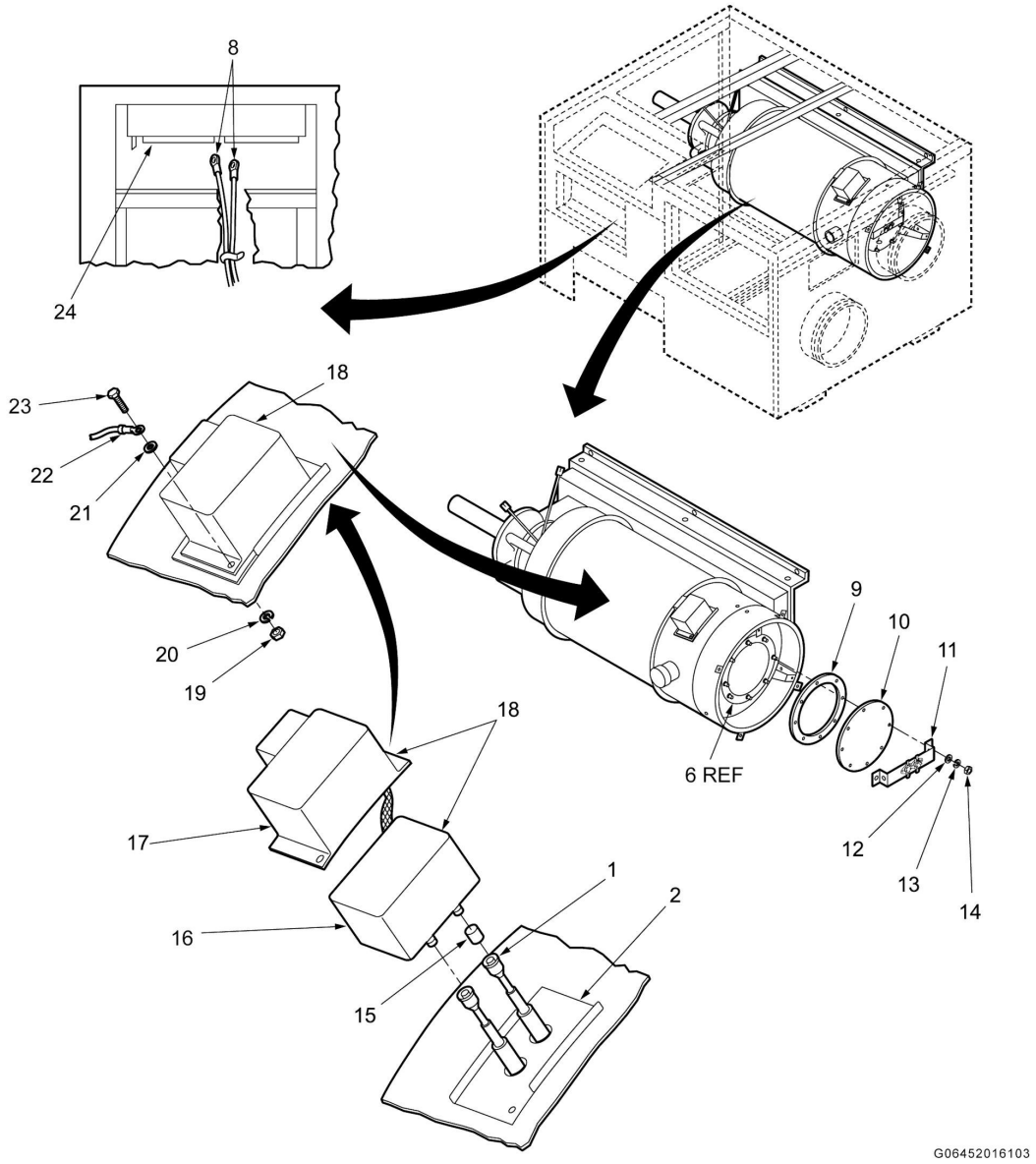


Figure 2. Transformer Model H-120 Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPAIR

INITIAL SETUP:

Tools and Special Tools
Heat Gun (Shop Set, Electrical Repair Kit) (WP 0117, Item 15)
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Gasket (WP 0084, Figure 12)
Gasket (WP 0084, Figure 13, Item 1)
Gasket (WP 0084, Figure 13, Item 2)
Heat Shrink Tubing (WP 0118, Item 9)
Lockwasher (WP 0100, Figure 28, Item 3)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer , 91J - (1)

Equipment Condition
ASH disconnected from power source
Top panel removed, WP 0019
Duct cover removed, WP 0022
Supply outlet screen removed, WP 0023

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

The Model H-120-1 transformer assembly consists of two components, the transformer and the transformer cover. This transformer assembly model does not have a filter attached to the side of the transformer cover, as noted in the first illustration (Figure 1, Item 22).

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

TRANSFORMER ASSEMBLY MODEL H-120-1

Removal

1. Tag and separate wire TB1-8/TR1-BLU (Figure 1, Item 1) and wire TR1-WHT/TB1-3 (Figure 1, Item 2) from the two terminal splices (Figure 1, Item 3). Discard the terminal splices.
2. Remove the two nuts (Figure 1, Item 6), two lockwashers (Figure 1, Item 5), two bolts (Figure 1, Item 25), ground wire (Figure 1, Item 24), and two flat washers (Figure 1, Item 23) that fasten the transformer cover (Figure 1, Item 22) to the transformer (Figure 1, Item 21); and the transformer assembly (Figure 1, Item 4) to the base plate (Figure 1, Item 18). Discard the lockwashers.

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPAIR - (CONTINUED)

3. Remove the transformer cover (Figure 1, Item 22) and lift the transformer (Figure 1, Item 21) away from the base plate (Figure 1, Item 18), remove the two heat shrink tubes (Figure 1, Item 20), and disconnect the two high-tension leads (Figure 1, Item 19) from the transformer terminals. Discard the heat shrink.
4. Tag the braided wires (Figure 1, Item 13) and (Figure 1, Item 14) that are attached to the exchanger cover plate (Figure 1, Item 8).
5. Remove the eight nuts (Figure 1, Item 12), eight lockwashers (Figure 1, Item 11), and eight flat washers (Figure 1, Item 10) that attach the thermostat bracket (Figure 1, Item 9), braided wires, and cover plate (Figure 1, Item 8) to the heat exchanger. Discard the lockwashers.
6. Remove the gasket (Figure 1, Item 7) from the cover plate (Figure 1, Item 8). Discard the gasket.
7. Disconnect the other end of the two high-tension leads (Figure 1, Item 19) and remove the leads through the transformer base plate (Figure 1, Item 18).
8. Remove the two grommets (Figure 1, Item 15) providing a smooth collar between the base plate and the heat exchanger shell.
9. Remove the transformer base plate (Figure 1, Item 18).
10. Remove the two short shielded gaskets (Figure 1, Item 16) and the two longer shielded gaskets (Figure 1, Item 17), as required.

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPAIR - (CONTINUED)

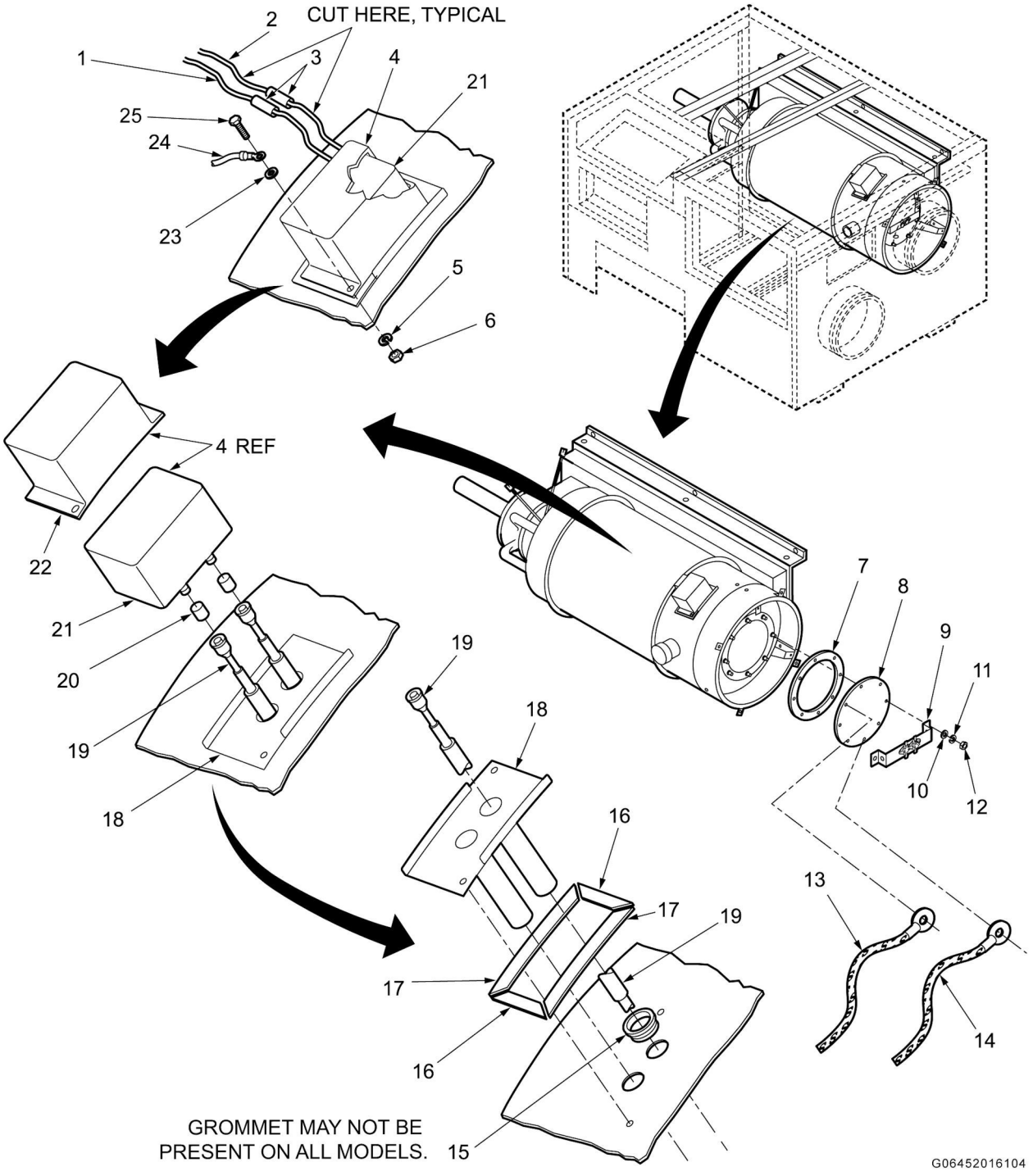


Figure 1. Transformer (Model H-120-1) Removal.

Installation

1. Apply the two short shielded gaskets (Figure 2, Item 3) and the two longer shielded gaskets (Figure 2, Item 4), as required, and install the transformer base plate (Figure 2, Item 2) on the heat exchanger shell.

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPAIR - (CONTINUED)

2. Install the two high-tension leads (Figure 2, Item 1) through the holes in the transformer base plate (Figure 2, Item 2) and attach one end of the two high-tension leads to the electrodes of the burner assembly (Figure 2, Item 7).
3. Slide the heat shrinks (Figure 2, Item 19) over the high-tension leads (Figure 2, Item 1) and install the high-tension leads on the transformer terminals (Figure 2, Item 20).
4. Position and secure the heat shrink (Figure 2, Item 19) over the high-tension leads (Figure 2, Item 1) and the transformer terminals (Figure 2, Item 20).
5. Position the transformer (Figure 2, Item 20) on the transformer base plate (Figure 2, Item 2).
6. Place the transformer cover (Figure 2, Item 21) over top of the transformer (Figure 2, Item 20) and install two bolts (Figure 2, Item 26), two flat washers (Figure 2, Item 24), ground wire (Figure 2, Item 25), two new lockwashers (Figure 2, Item 23), and two nuts (Figure 2, Item 22) to secure the transformer assembly (Figure 2, Item 10) to the base plate (Figure 2, Item 2) and heat exchanger shell.
7. Connect wires TR1-BLU/TB1-8 and TR1-WHT/TB1-3 (Figure 2, Item 8) to their respective terminal splices (Figure 2, Item 9). Remove the wire marker tags.
8. Install the two grommets (Figure 2, Item 5) over the two high-tension leads (Figure 2, Item 1) and insert the grommets approximately 1/4 inch into the transformer base plate (Figure 2, Item 2). Cut to fit: the new grommets may have to be cut so they can be installed over the high-tension leads.
9. Position the new gasket (Figure 2, Item 11) on the cover plate (Figure 2, Item 12), aligning the holes on the gasket with the holes on the cover plate; and then mount both on the exchanger's eight studs surrounding the opening for the burner assembly (Figure 2, Item 6).
10. With the new gasket and cover plate in position on the heat exchanger, connect one of the braided wires (Figure 2, Item 17) on the stud at the 6 o'clock position; and connect the other braided wire (Figure 2, Item 18) on the stud at the 10 o'clock position; and secure both with two flat washers (Figure 2, Item 14), two new lockwashers (Figure 2, Item 15) and two nuts (Figure 2, Item 16). Remove the wire marker tags.
11. With the new gasket and cover plate being held in position by the two braided wire connections, mount the thermostat bracket (Figure 2, Item 13) on the cover plate (Figure 2, Item 12) using two of the same eight studs surrounding the opening (Figure 2, Item 6), and secure with two flat washers (Figure 2, Item 14), two new lockwashers (Figure 2, Item 15), and two nuts (Figure 2, Item 16), making sure that the bracket is horizontal to the bottom of the ASH. Typically, best results are achieved using the studs at the 3 o'clock and 9 o'clock position.
12. With these three components (the gasket, the cover plate, and the bracket) now covering the opening for the burner assembly, install the remaining four flat washers (Figure 2, Item 14), the four new lockwashers (Figure 2, Item 15), and the four nuts (Figure 2, Item 16) on the remaining four studs. Tighten sufficiently to hold the assembled components securely in place.

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPAIR - (CONTINUED)

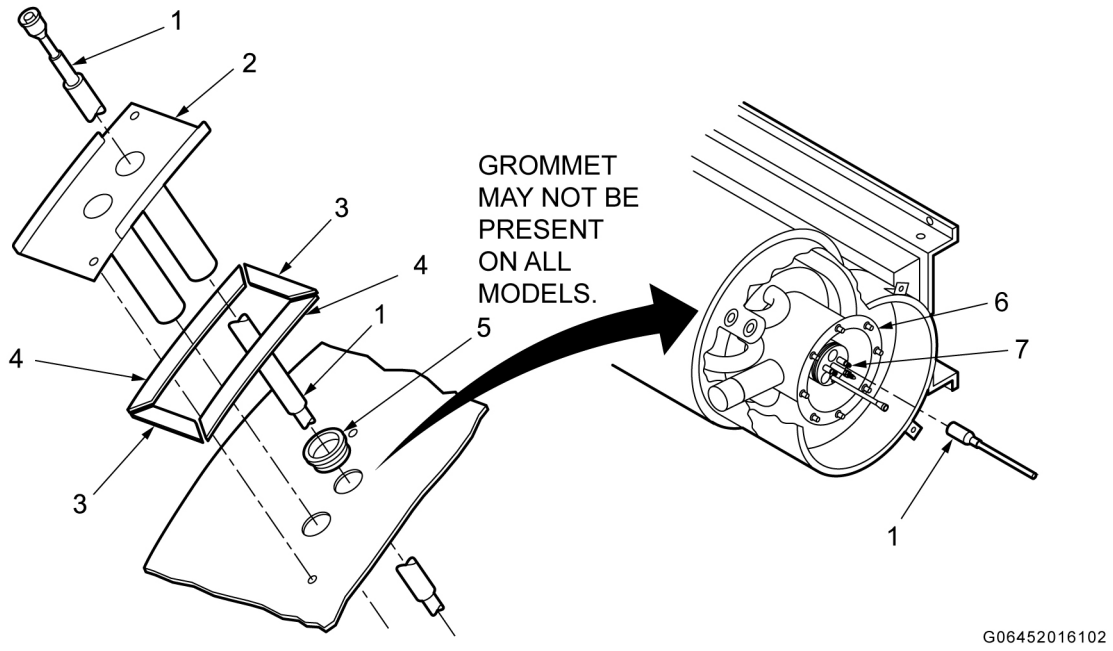


Figure 2. Transformer Model H-120-1 Installation (Sheet 1 of 2).

TRANSFORMER ASSEMBLY (MODEL H-120-1) REPAIR - (CONTINUED)

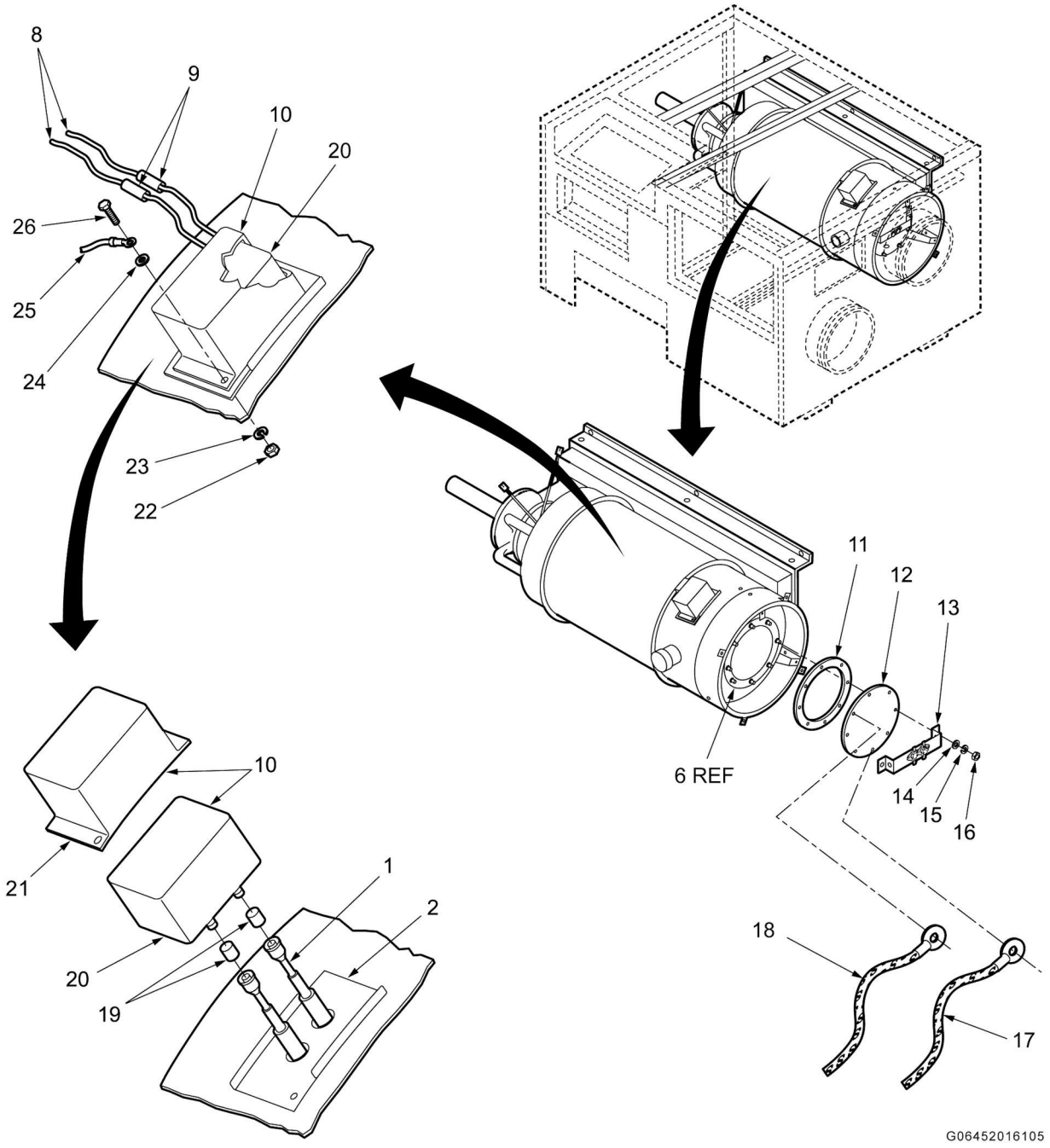


Figure 2. Transformer Model H-120-1 Installation (Sheet 2 of 2).

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

BURNER ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Dry Cleaning Solvent (WP 0116, Item 4)
Gasket (WP 0100, Figure 29, Item 9)
Lockwashers (WP 0100, Figure 29, Item 4)
Rags (WP 0116, Item 11)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source
Supply duct cover removed, WP 0022
Supply outlet screen removed, WP 0023

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

BURNER ASSEMBLY REPAIR

Removal

1. Remove the eight nuts (Figure 1, Item 6), eight lockwashers (Figure 1, Item 5), and eight flat washers (Figure 1, Item 4) that fasten the cover plate (Figure 1, Item 2) and thermostat bracket (Figure 1, Item 3) to the heat exchanger. Discard the lockwashers.

NOTE

The cover plate (Figure 1, Item 2) may have two braided wires (Figure 1Items 7 and 8) functioning as grounds attached on some models.

BURNER ASSEMBLY REPAIR - (CONTINUED)

2. Tag and disconnect the braided grounding wires (Figure 1, Item 7) and (Figure 1, Item 8), if attached to the cover plate (Figure 1, Item 2).
3. With the fasteners removed, remove the thermostat bracket (Figure 1, Item 3), cover plate (Figure 1, Item 2), and gasket (Figure 1, Item 1) from the heat exchanger studs surrounding the opening for the burner assembly. Discard the gasket.
4. Disconnect the two high-tension leads (Figure 1, Item 23) from the two electrodes on the burner assembly (Figure 1, Item 14).

NOTE

Beware of potential fuel spill. There is no shutoff valve on the fuel line from the fuel pump to the burner so disconnecting the burner fuel line in the next step will cause fuel to flow out of the open line. Prevent this fuel spill. Be prepared with a 'catch basin' to catch the draining fuel or have an ample supply of rags or towels on-hand to absorb it.

5. Disconnect the fuel line (Figure 1, Item 24) from the burner assembly (Figure 1, Item 14). Prevent fuel spill from the open fuel line as noted above.
6. If the flame sensor (Figure 1, Item 12) has braided wire; loosen clamps (Figure 1, Item 11) and (Figure 1, Item 10), slide braided wire (Figure 1, Item 13) off the tube (Figure 1, Item 9), and remove the flame sensor (Figure 1, Item 12).
7. If the flame sensor (Figure 1, Item 12) does not have braided wire; loosen clamp (Figure 1, Item 11) and remove the flame sensor (Figure 1, Item 12).
8. Remove the six nuts (Figure 1, Item 22), six lockwashers (Figure 1, Item 21), and six flat washers (Figure 1, Item 20) surrounding the burner assembly (Figure 1, Item 14). Discard the lockwashers.
9. Remove the burner assembly (Figure 1, Item 14) and the gasket (Figure 1, Item 18) from the heat exchanger. Discard the gasket.
10. Remove the three screws (Figure 1, Item 15) from the burner assembly (Figure 1, Item 14) that secures the baffle (Figure 1, Item 17), which frees the baffle to be removed from the burner assembly.
11. Remove the fuel filter/nozzle (Figure 1, Item 16) from the baffle (Figure 1, Item 17).

BURNER ASSEMBLY REPAIR - (CONTINUED)

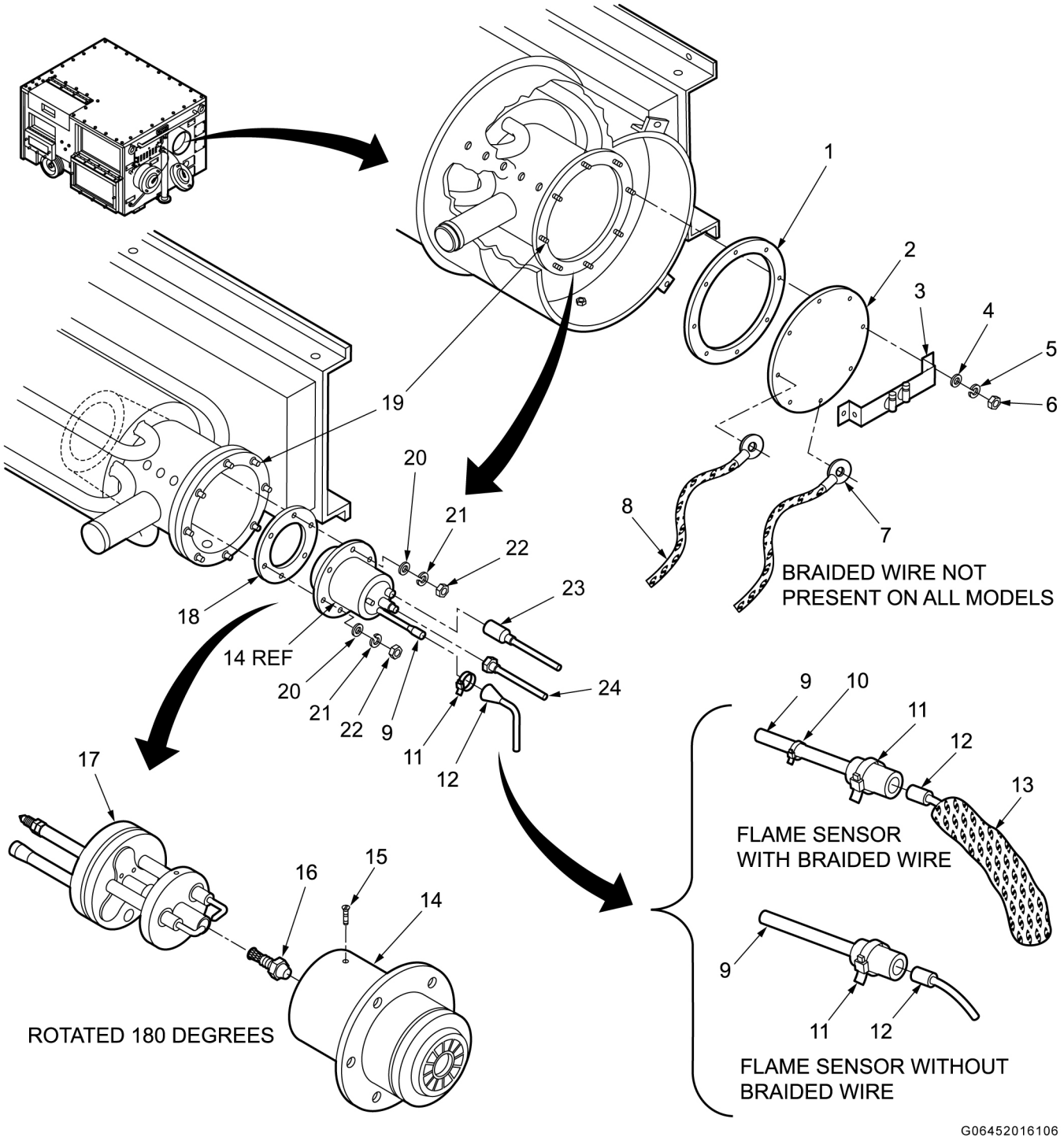


Figure 1. Burner Assembly Removal.

Inspection

1. Inspect burner assembly for cracks, wear, and damage to parts.

BURNER ASSEMBLY REPAIR - (CONTINUED)

2. Inspect for carbon or soot buildup; clean as required.

Disassembly

1. Remove the three set screws (Figure 2, Item 3) from the burner assembly housing (Figure 2, Item 4) that secures the baffle assembly (Figure 2, Item 5) in the burner assembly housing. The baffle assembly is now free to be removed from the burner assembly housing.

CAUTION

The petal valve can be damaged by rough handling. Be careful when disassembling the burner assembly to prevent damaging the petal valve.

NOTE

When removing the baffle assembly, the fuel tube, electrodes and tube assembly will also come out. If the baffle assembly is difficult to remove, light pressure may be applied to the nozzle. Resistance is caused by packing around the baffle assembly.

2. Remove the baffle assembly (Figure 2, Item 5) from the burner assembly housing (Figure 2, Item 4).
3. With the baffle assembly exposed (Figure 2, Item 5), remove the preformed packing (Figure 2, Item 6) from the baffle assembly. Discard the packing.
4. Remove the setscrew (Figure 2, Item 2) that holds the fire ring (Figure 2, Item 1) in place in the burner assembly housing (Figure 2, Item 4) and remove the fire ring from the housing.
5. Remove two setscrews (Figure 2, Item 8) from the baffle (Figure 2, Item 7), which frees the two electrodes (Figure 2, Item 20) to be removed from the baffle assembly (Figure 2, Item 5). Also remove the electrode's preformed packing (Figure 2, Item 19) and baffle sleeves (Figure 2, Item 11). Discard the packing.
6. Remove the setscrew (Figure 2, Item 10) from the baffle (Figure 2, Item 7) which permits the tube assembly (Figure 2, Item 9) to be removed from the baffle.
7. Remove the setscrew (Figure 2, Item 21) from the back of baffle (Figure 2, Item 22) which permits the fuel tube (Figure 2, Item 16) and nozzle (Figure 2, Item 18) to be removed from the baffle.
8. Remove the nozzle (Figure 2, Item 18) and filter/screen (Figure 2, Item 17) from the fuel tube (Figure 2, Item 16).
9. Remove the three screws (Figure 2, Item 15), three lockwashers (Figure 2, Item 14), three flat washers (Figure 2, Item 13) and petal valve (Figure 2, Item 12) from the baffle (Figure 2, Item 7); remembering to handle the petal valve carefully to avoid damaging it during the removal process. Discard the lockwashers.

BURNER ASSEMBLY REPAIR - (CONTINUED)

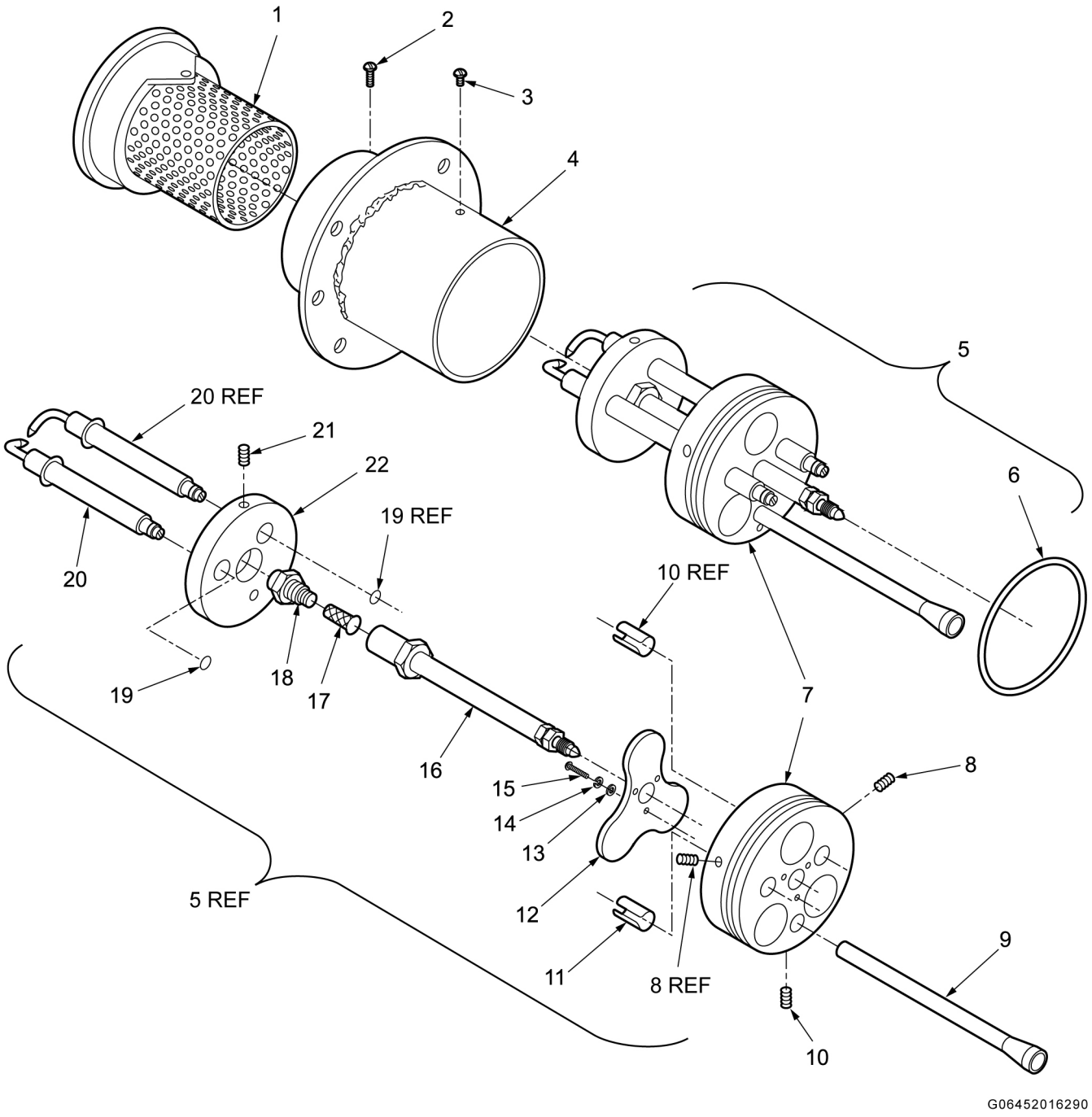


Figure 2. Disassembly of the Burner Assembly.

BURNER ASSEMBLY REPAIR - (CONTINUED)

Repair

WARNING

Cleaning compound solvent vapors are toxic. Avoid prolonged or repeated breathing of vapors or solvent contact with skin. Use only with adequate ventilation. Solvent is flammable and should not be used near open flame. Be sure a fire extinguisher is available.

1. Clean burner assembly with cleaning compound solvent and let dry.
2. Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.
3. Repair is limited to replacement of nozzle, filter, and burner assembly.

Assembly

CAUTION

The petal valve can be damaged by rough handling. Be careful when assembling the burner assembly to prevent damaging the petal valve.

NOTE

The front of the block assembly is the flat face farthest from the packing groove. The packing groove is toward the back face of the block.

1. Install the petal valve (Figure 3, Item 1) on the front of the block (Figure 3, Item 2) and secure with three screws (Figure 3, Item 8), three lockwashers (Figure 3, Item 7) and three flat washers (Figure 3, Item 6), being careful to handle the petal valve gently.
2. Install the fuel screen/filter (Figure 3, Item 4) on the nozzle (Figure 3, Item 3) of the fuel tube (Figure 3, Item 5).

CAUTION

Damage to the fuel tube may result if the nozzle is over tightened during installation.

3. Install the nozzle (Figure 3, Item 3) in the fuel tube (Figure 3, Item 5) snugly, but do NOT overtighten.

BURNER ASSEMBLY REPAIR - (CONTINUED)

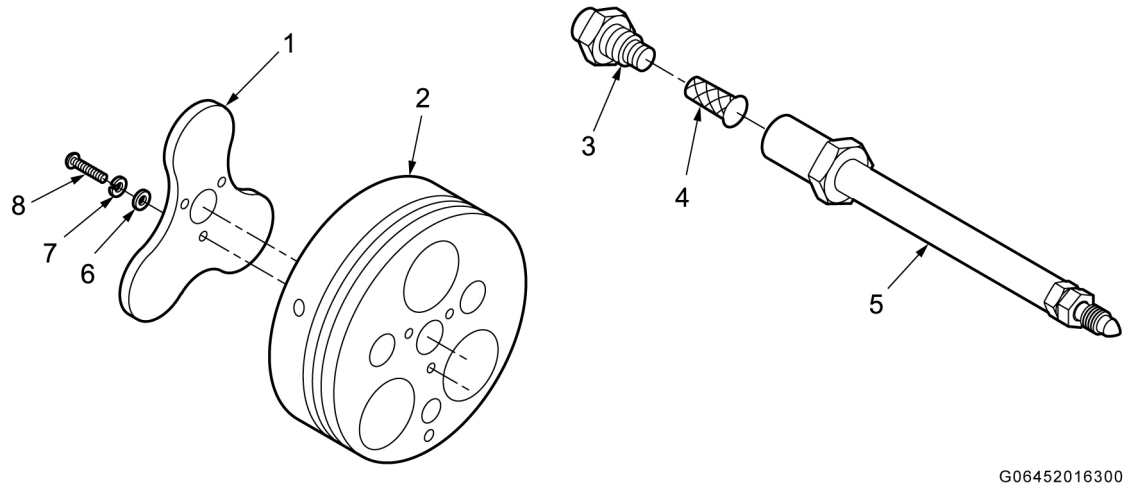


Figure 3. Burner Assembly: Petal Valve & Fuel Tube Nozzle Screen/Filter.

4. Install the fuel tube (Figure 4, Item 4) into the baffle (Figure 4, Item 2) until the baffle contacts the hex nut (Figure 4, Item 3) on the fuel tube; then, install the setscrew (Figure 4, Item 1) into the baffle (Figure 4, Item 2) to secure the fuel tube/baffle connection.

NOTE

The next step is a temporary measure to help keep the baffle and block aligned. It will be undone immediately after the block and baffle are secure.

5. Insert the two electrodes (Figure 4, Item 7) and preformed packing/o-rings (Figure 4, Item 8) into the baffle (Figure 4, Item 2) as a temporary measure to assist in the alignment of the baffle and block. The electrodes will be removed from the baffle immediately after the block setscrew is tightened on the fuel tube.
6. Install the fuel tube (Figure 4, Item 4) through the center hole (Figure 4, Item 7) in the front of the block (Figure 4, Item 5); ensuring that the distance between the front of the block (Figure 4, Item 5) and the back of the baffle (Figure 4, Item 2) is 1-1/4 inches (Figure 4View A).
7. Install the setscrew (Figure 4, Item 6) into the block (Figure 4, Item 5) to secure the fuel tube/block connection; and confirm that the critical 1-1/4 inch distance between the block (Figure 4, Item 5) and the baffle (Figure 4, Item 2) has been maintained.

BURNER ASSEMBLY REPAIR - (CONTINUED)

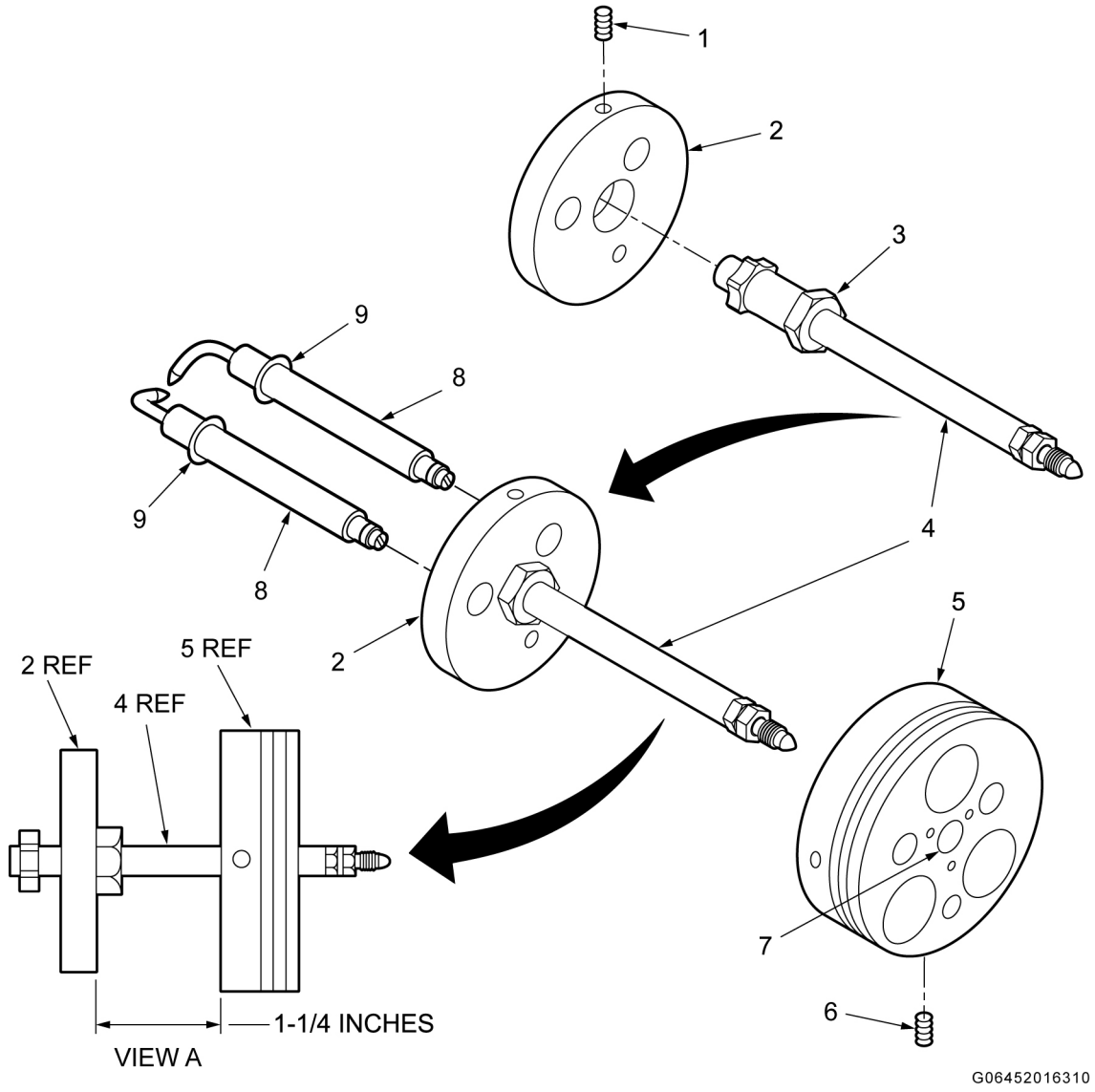


Figure 4. Burner Assembly: Fuel Tube to Baffle & Block Connection.

8. The temporary measure taken above with the electrodes is no longer needed. The electrodes may now be removed from the baffle now that the alignment of the baffle and block has been secured by the installation of the fuel tube. Remove the two electrodes.
9. Install the two sleeves (Figure 5, Item 3) into the block (Figure 5, Item 1), making sure that slots in the sleeves are 180º away from the setscrews (Figure 5, Item 2).
10. Install two preformed packing/o-rings (Figure 5, Item 6) onto the two electrodes (Figure 5, Item 5) toward the tips (end containing the bent electrodes).
11. Clean the white porcelain on the two electrodes with approved cleaning solvent and wipe dry, being sure to wear personal protective equipment to prevent direct contact of solvent with skin.
12. Treat the white porcelain on the electrodes with sealing primer as follows: measure approximately 1-3/8 inch from connector end of the two electrodes (Figure 5, Item 5) and apply sealing primer to the next 1 inch of porcelain (Figure 5, Item 4).

BURNER ASSEMBLY REPAIR - (CONTINUED)

NOTE

Only areas on electrodes treated with sealing primer should have Loctite applied.

13. Apply two drops of Loctite on each electrode (Figure 5, Item 5) and spread over the area on each electrode treated with sealing primer (Figure 5, Item 4).

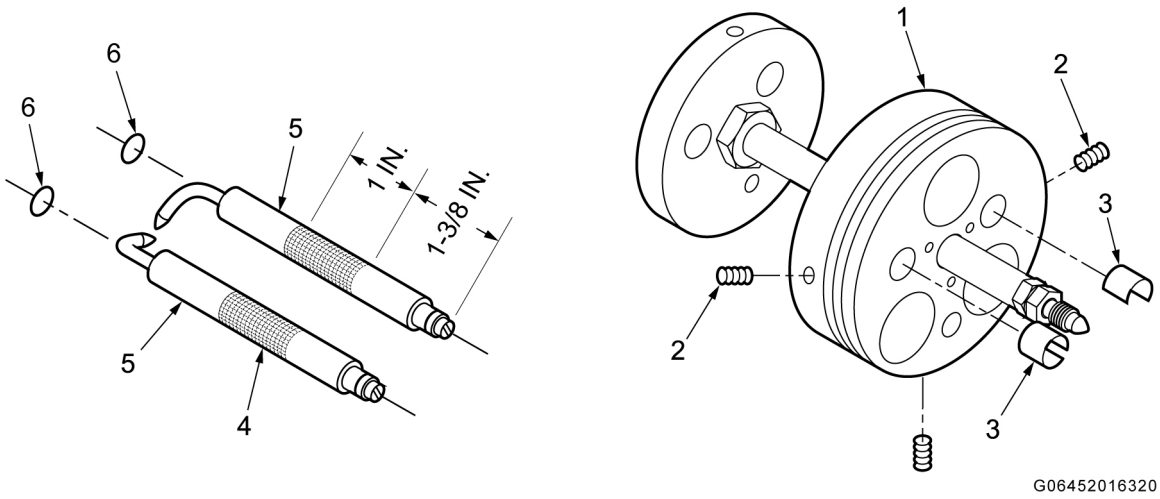


Figure 5. Burner Assembly: Electrode Preparation.

14. Insert the two electrodes (Figure 6, Item 2) into the baffle (Figure 6, Item 3) and block (Figure 6, Item 4), making sure that preformed packing/o-rings (Figure 6, Item 1) on each electrode are inserted into the baffle (Figure 6, Item 3).
15. Install two setscrews (Figure 6, Item 5) into the block (Figure 6, Item 4) to secure the electrode/block connection; but do NOT tighten at this time.
16. Position the tips of the electrodes (Figure 6, Item 2) 3/8 inch in front of the nozzle (Figure 6, Item 6) and 3/8 inch above the nozzle discharge port (Figure 6View A).
17. Tighten the two setscrews (Figure 6, Item 5) into the block (Figure 6, Item 4) snugly, but do NOT overtighten.

CAUTION

Electrodes may be damaged during bending of electrode tips. Care must be taken when bending the tips not to damage the electrode in the process of adjusting the gap between the tips of the two electrodes.

18. Carefully adjust the gap between the two electrodes (Figure 6, Item 2) by bending the electrode tips so that there is a 1/8 inch gap between them (Figure 6View B).
19. Recheck electrodes position to confirm that the specified dimensions of Figure 6View Aand Figure 6View Bhave been maintained. Repeat the above steps 16 through 18, if necessary.

BURNER ASSEMBLY REPAIR - (CONTINUED)

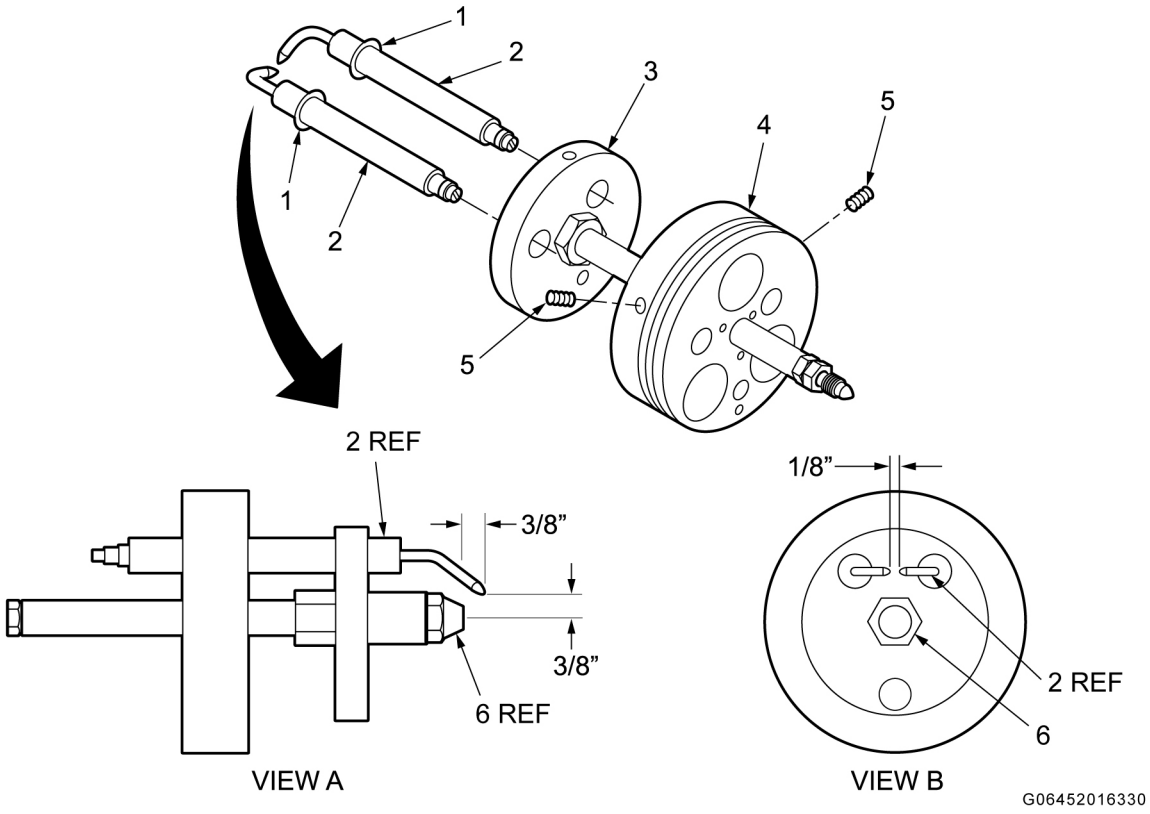


Figure 6. Burner Assembly: Electrode to Baffle & Block Connection.

20. Check the position of the two preformed packing/o-rings (Figure 6, Item 1) which should be approximately centered in the baffle (Figure 6, Item 3).
21. Install the tube (Figure 7, Item 6) into the block assembly (Figure 7, Item 7). This is the tube that the flame sensor connects to.
22. Install the preformed packing/o-ring (Figure 7, Item 5) on the block assembly (Figure 7, Item 7).
23. Install the fire ring (Figure 7, Item 1) into the flanged burner assembly housing (Figure 7, Item 4) and secure in place with the single setscrew (Figure 7, Item 2) in the hole provided in the burner assembly housing.
24. Install the block assembly (Figure 7, Item 7) flush into the flanged burner assembly housing (Figure 7, Item 4), being careful to align the tube for the flame sensor (Figure 7, Item 6) with the notch on the bottom of the fire ring (Figure 7, Item 8); and secure in place by installing the three setscrews (Figure 7, Item 3) in the holes provided in the burner assembly housing (Figure 7, Item 4).

BURNER ASSEMBLY REPAIR - (CONTINUED)

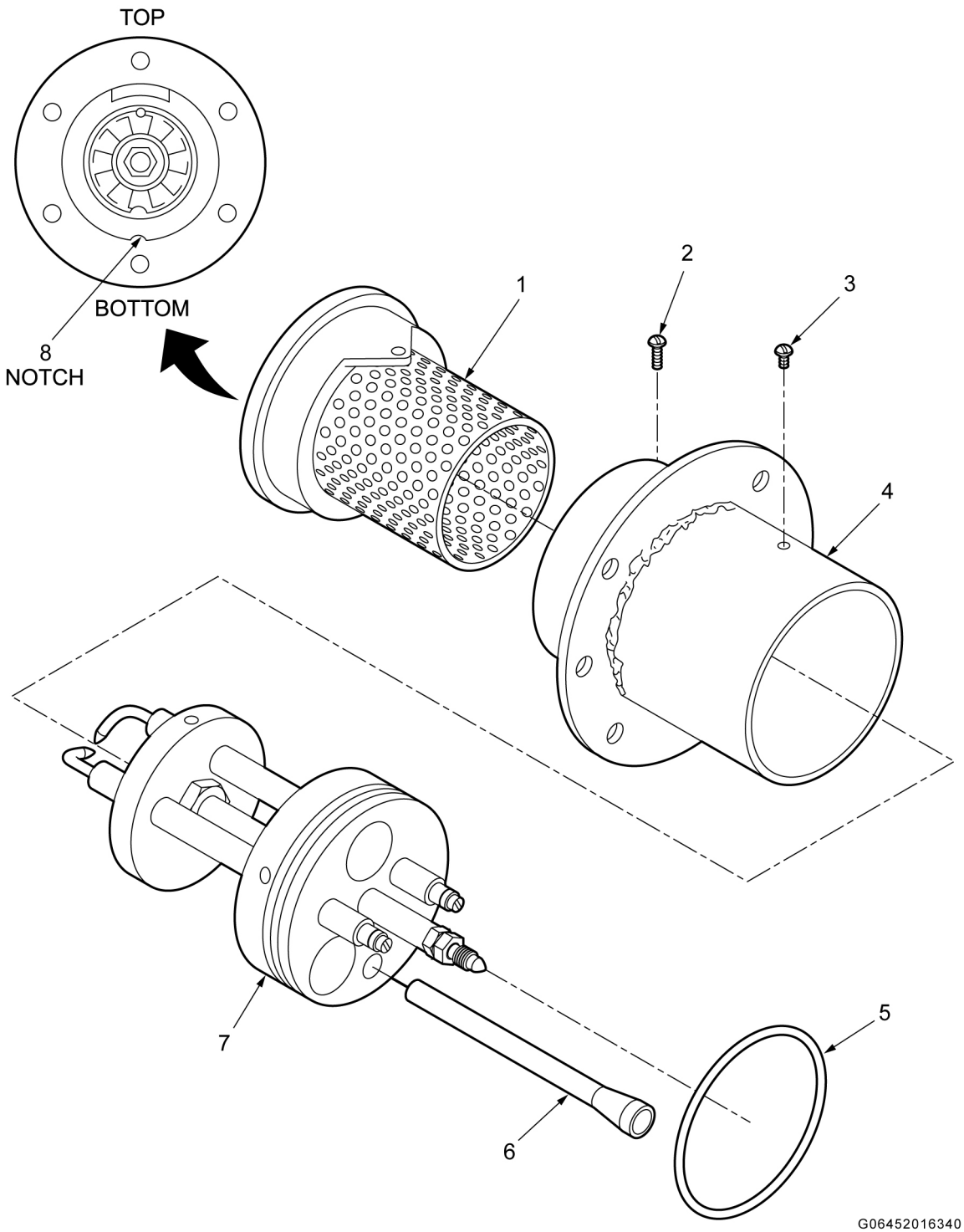


Figure 7. Burner Assembly: Block Assembly to Flange Burner Assembly Housing.

Installation

1. Install the fuel filter/nozzle (Figure 8, Item 16) into the baffle (Figure 8, Item 17).

BURNER ASSEMBLY REPAIR - (CONTINUED)

NOTE

The burner must be installed with the flame detector tube on the bottom.

2. Install the baffle (Figure 8, Item 17) into the burner assembly housing (Figure 8, Item 14) and secure by installing the three set screws (Figure 8, Item 15) in the holes provided in the burner assembly housing.
3. Mount the new gasket (Figure 8, Item 18) on the burner assembly (Figure 8, Item 14), aligning the six holes in the gasket with the six holes on the flange surrounding the burner assembly. When properly positioned, install the new gasket and burner assembly onto the studs on the flange in the well of the exchanger; and secure with the six nuts (Figure 8, Item 22), six new lockwashers (Figure 8, Item 21), and six flat washers (Figure 8, Item 20).
4. If the flame sensor (Figure 8, Item 12) does not have braided wire; slide the clamp (Figure 8, Item 11) on the tube (Figure 8, Item 9) and install the flame sensor (Figure 8, Item 12) onto the tube, securing it with the clamp.
5. If the flame sensor (Figure 8, Item 12) does have braided wire; slide the clamps (Figure 8, Item 10) and (Figure 8, Item 11) on the tube (Figure 8, Item 9), install flame sensor (Figure 8, Item 12) into tube (Figure 8, Item 9), slide braided wire (Figure 8, Item 13) over tube (Figure 8, Item 9), and secure with clamp (Figure 8, Item 10). Position the other clamp (Figure 8, Item 11) over the sensor (Figure 8, Item 12) and braided wire (Figure 8, Item 13) and secure.
6. Connect the fuel line (Figure 8, Item 24) and the two high-tension leads (Figure 8, Item 23) to the burner assembly (Figure 8, Item 14).
7. Position the new gasket (Figure 8, Item 1) on the cover plate (Figure 8, Item 2), aligning the holes on the gasket with the holes on the cover plate; and mount both on the eight studs (Figure 8, Item 19) surrounding the heat exchanger burner assembly opening.
8. With the new gasket and cover plate in position, mount the thermostat bracket (Figure 8, Item 3) on the cover plate (Figure 8, Item 2) using two of the same eight studs used by the cover plate, making sure that the bracket is horizontal to the bottom of the ASH. Typically, best results are achieved using the studs at the 3 o'clock position and the 9 o'clock position.
9. Secure the thermostat bracket (Figure 8, Item 3) in the horizontal position on the cover plate by installing two washers (Figure 8, Item 4), two new lockwashers (Figure 8, Item 5), and two nuts (Figure 8, Item 6) on the same two studs used by the bracket.

NOTE

The cover plate (Figure 8, Item 2) may have two braided ground wires attached on some models. If the cover plate is equipped with two braided ground wires, attach one braided wire (Figure 8, Item 7) on the stud at the 6 o'clock position and attach the other braided wire (Figure 8, Item 8) on the stud at the 10 o'clock position. Remove the wire marker tags.

10. With these three components (the gasket, the cover, and the bracket) properly positioned on the heat exchanger studs, install the remaining six flat washers (Figure 8, Item 4), six new lockwashers (Figure 8, Item 5), and six nuts (Figure 8, Item 6) on the remaining six studs (Figure 8, Item 19). Tighten sufficiently to hold the assembled components securely in place.

BURNER ASSEMBLY REPAIR - (CONTINUED)

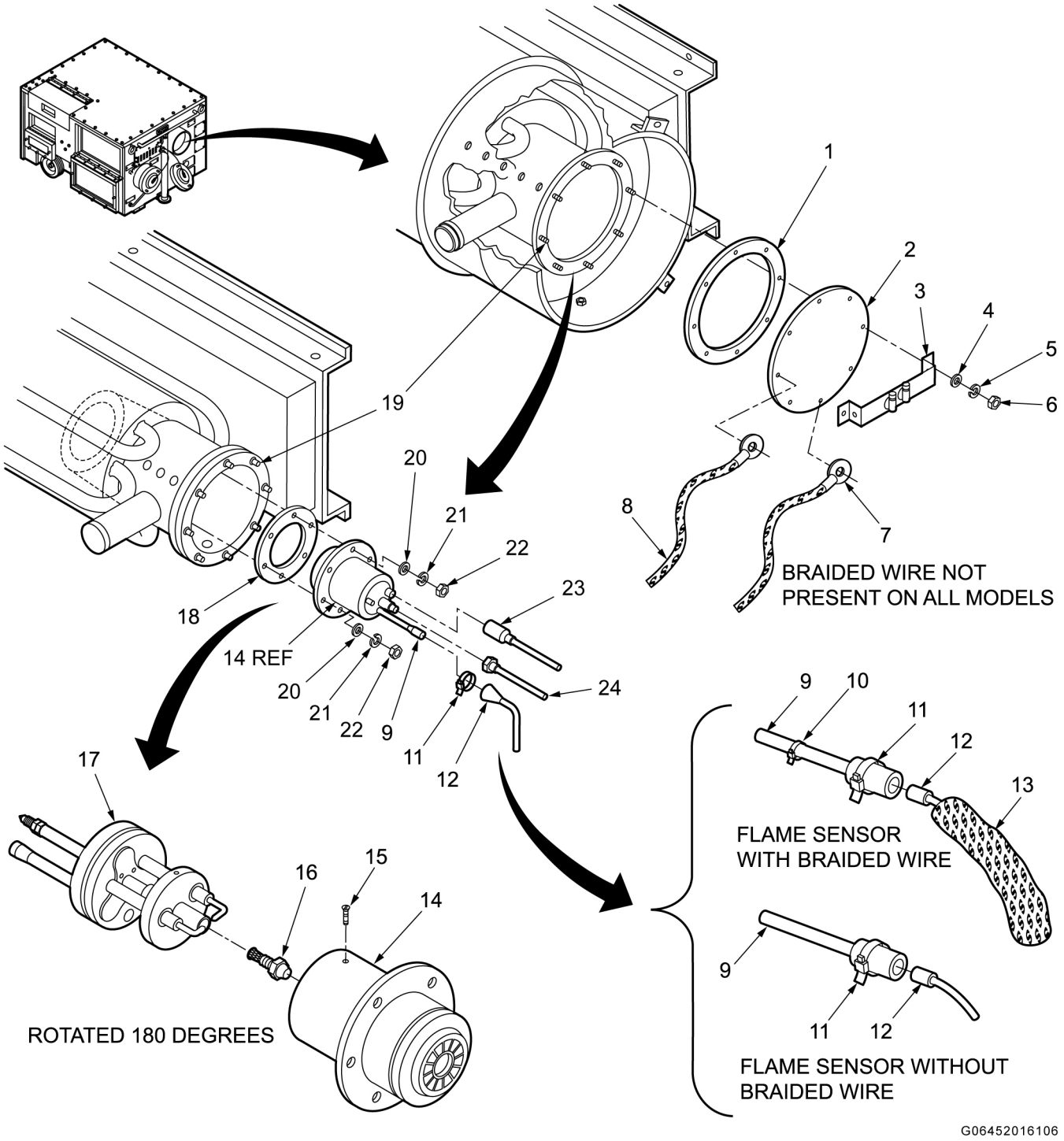


Figure 8. Burner Assembly Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

REMOTE CONTROL THERMOSTAT REPAIR

INITIAL SETUP:

Tools and Special Tools
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Soldering Iron (Shop Set, Electrical Repair Kit) (WP 0117, Item 18)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

REMOTE CONTROL THERMOSTAT REPAIR

Disassembly

1. Disconnect the remote control thermostat assembly (Figure 1, Item 6) from the front panel of the ASH (Figure 1, Item 5) next to the damper grill labeled “J3 Remote Thermostat”(Figure 1, Item 4).
2. Remove the four screws (Figure 1, Item 3) and the cover (Figure 1, Item 2) from the back of the thermostat remote control box (Figure 1, Item 1).
3. Remove the three screws (Figure 1, Item 8), tag the individual wires, and remove the three wires (Figure 1, Item 9), (Figure 1, Item 10), and (Figure 1, Item 11) that terminate at terminal board 2 (TB2) (Figure 1, Item 15) located inside the thermostat box (Figure 1, Item 1).
4. Loosen the cable nut (Figure 1, Item 13) and remove the cable (Figure 1, Item 12) from the remote thermostat box (Figure 1, Item 1).
5. Remove the box interior nut (Figure 1, Item 16) and connector (Figure 1, Item 14) providing a wire raceway through the bottom of the thermostat box (Figure 1, Item 1).

REMOTE CONTROL THERMOSTAT REPAIR - (CONTINUED)

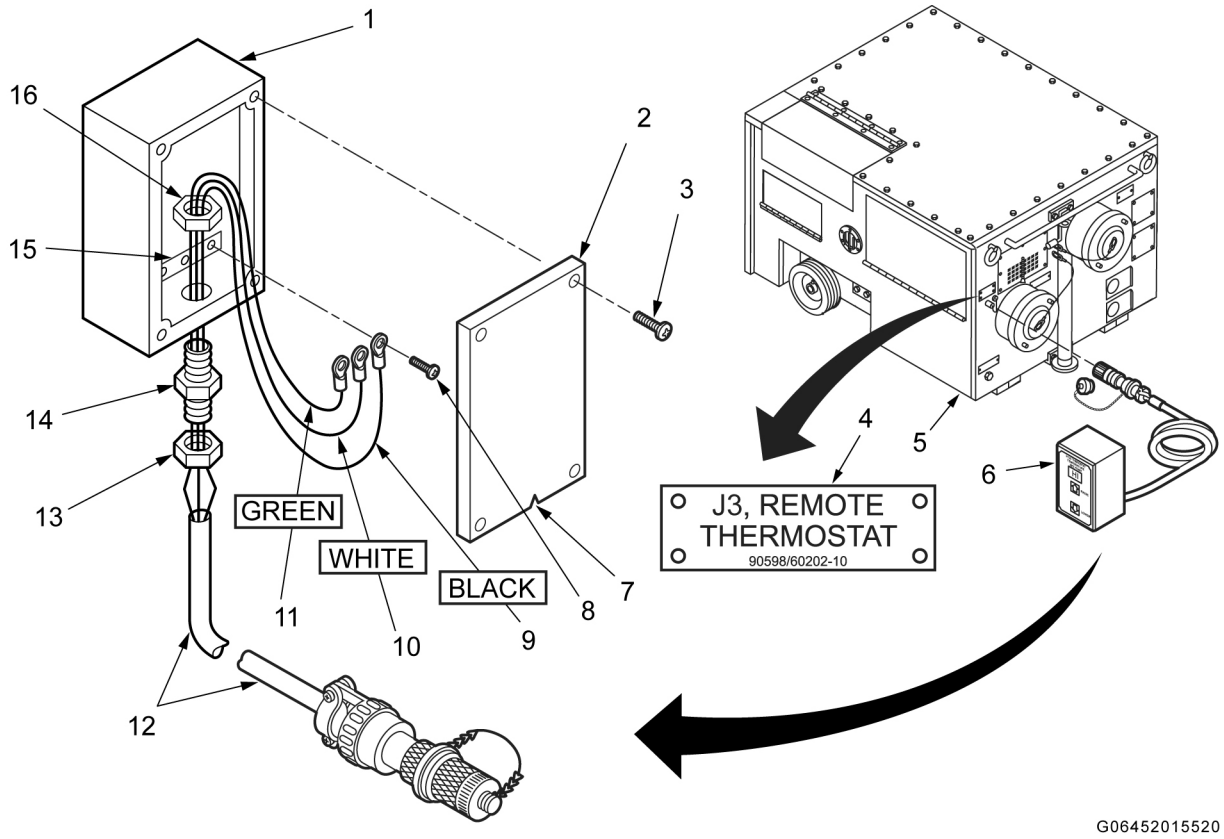


Figure 1. Remote Control Thermostat Disassembly.

Inspection

1. Inspect wire connection at terminal board TB2 for secure mounting, burnt, broken, or bent terminals and corrosion.
2. Inspect lug terminal for secure mounting and signs of burning and corrosion.
3. Inspect cable for cracked, burnt, or deteriorated insulation and exposed conductor.

Repair

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

Repair of the thermostat cable consists of replacing damaged parts with new parts. If the cable is damaged, the complete assembly must be replaced.

1. Repair thermostat cable as outlined below:
   a. Cut strap (Figure 2, Item 3) from connector plug (Figure 2, Item 2) and remove cover assembly (Figure 2, Item 1).
   b. Remove two bolts (Figure 2, Item 13), two nuts (Figure 2, Item 15), and two saddles (Figure 2, Item 12) from the clamp (Figure 2, Item 11).
   c. Unscrew the clamp (Figure 2, Item 11) and slide the clamp, grommet follower (Figure 2, Item 10), grommet (Figure 2, Item 9), and rubber bushing (Figure 2, Item 7) down on the cable (Figure 2, Item 14).
   d. Unscrew the sleeve (Figure 2, Item 6) from the connector plug (Figure 2, Item 2) and slide the sleeve down on the cable (Figure 2, Item 14).
   e. Tag the three individual wires (Figure 2, Item 4), (Figure 2, Item 5), and (Figure 2, Item 8) that comprise the cable bundle.

REMOTE CONTROL THERMOSTAT REPAIR - (CONTINUED)

f. Cut the connector plug (Figure 2, Item 2) from the cable (Figure 2, Item 14).

g. Slide sleeve (Figure 2, Item 6), bushing (Figure 2, Item 7), grommet (Figure 2, Item 9), grommet follower (Figure 2, Item 10), and clamp (Figure 2, Item 11) from the cable (Figure 2, Item 14).

h. Slide the cable clamp (Figure 2, Item 11), grommet follower (Figure 2, Item 10), grommet (Figure 2, Item 9), rubber bushing (Figure 2, Item 7), and sleeve (Figure 2, Item 6) on the cable (Figure 2, Item 14).

i. Strip 3/4 inch of insulation from the cable (Figure 2, Item 14) to expose the three insulated conductor wires (Figure 2Items 4, 5, and 8).

j. Strip 1/4 inch of insulation from the insulated conductor wires (Figure 2Items 4, 5, and 8), to expose the three bare metal conductor wires.

k. Solder the three bare metal conductor wires (Figure 2Items 4, 5, and 8) into the pins of the connector plug (Figure 2, Item 2) as follows:

(1) BLACK wire P1-A/TB1-1 (Figure 2, Item 5) to pin A.

(2) WHITE wire P1-B/TB1-2 (Figure 2, Item 4) to pin B.

(3) GREEN wire P1-C/G1 (Figure 2, Item 8) to pin C.

NOTE

Hold the connector plug while turning the sleeve assembly to prevent twisting of the conductor wires.

l. Hold the connector plug tight (Figure 2, Item 2) and slide the sleeve (Figure 2, Item 6) back up the cable (Figure 2, Item 14) and screw the sleeve onto the connector plug (Figure 2, Item 2).

m. Slide the rubber bushing (Figure 2, Item 7), grommet (Figure 2, Item 9), grommet follower (Figure 2, Item 10), and clamp (Figure 2, Item 11) up the cable (Figure 2, Item 14) until the sleeve (Figure 2, Item 6) is reached. Then, screw the clamp onto the sleeve.

NOTE

The rubber bushing should bulge slightly when the saddles on the clamp are tight.

n. Position the top and bottom portions of saddles (Figure 2, Item 12) on the clamp (Figure 2, Item 11) and secure in place by installing two bolts (Figure 2, Item 13) and two nuts (Figure 2, Item 15) through the saddles (Figure 2, Item 12).

o. Insert the strap (Figure 2, Item 3) through end of the chain on the cover (Figure 2, Item 1) and secure onto the connector plug (Figure 2, Item 2).

p. Screw the cover (Figure 2, Item 1) onto the connector plug (Figure 2, Item 2).

2. The repair of the other end of the cable is limited to the replacement of the terminal lugs.

REMOTE CONTROL THERMOSTAT REPAIR - (CONTINUED)

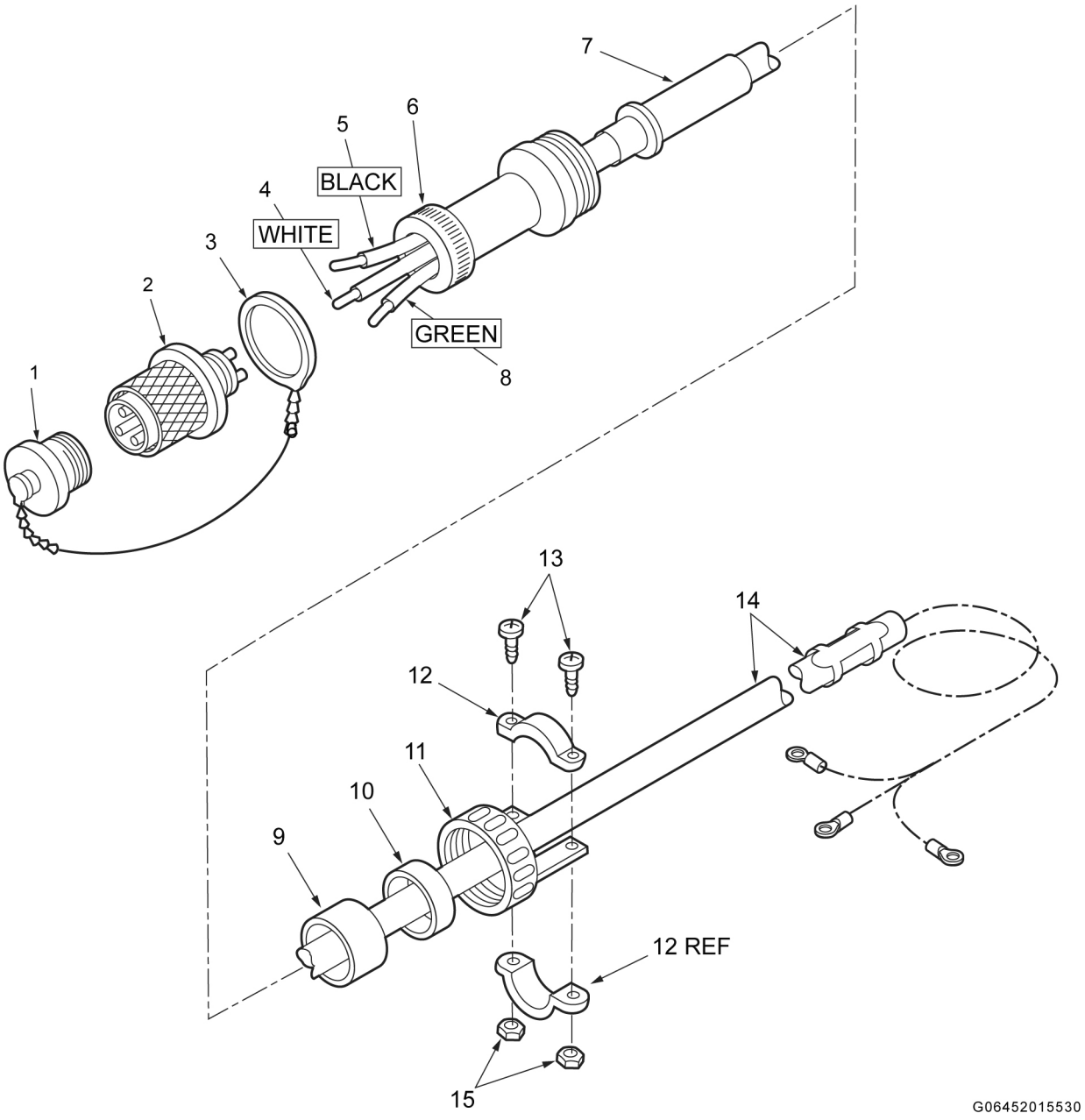


Figure 2. Thermostat Cable Repair.

Assembly

1. Install the connector (Figure 3, Item 14) through the bottom hole in the thermostat box (Figure 3, Item 1) and secure with box interior nut (Figure 3, Item 16).
2. Install wires (Figure 3, Item 9), (Figure 3, Item 10), and (Figure 3, Item 11) through the cable nut (Figure 3, Item 13) and connector (Figure 3, Item 14) into the thermostat box (Figure 3, Item 1).
3. Using the three screws previously removed from the wire terminals (Figure 3, Item 8), connect wires (Figure 3Items 9, 10, and 11), to terminal board 2 (TB2) (Figure 3, Item 15) configured as follows:
   a. Connect the GREEN wire P3-C/TB2-1 (Figure 3, Item 11) to TB2-1.
   b. Connect the WHITE wire P3-A/TB2-2 (Figure 3, Item 10) to TB2-2.

REMOTE CONTROL THERMOSTAT REPAIR - (CONTINUED)

c. Connect the BLACK wire P3-B/TB2-3 (Figure 3, Item 9) to TB2-3.

NOTE

The flat edges of the connector (Figure 3, Item 14) and box interior nut (Figure 3, Item 16) must be parallel with the back edge of the remote thermostat box (Figure 3, Item 1) or the cover (Figure 3, Item 2) will not seal properly.

4. Position the cable (Figure 3, Item 12) in the connector (Figure 3, Item 14) until the cable insulation is flush with the inside of the connector (Figure 3, Item 14) and tighten the cable nut (Figure 3, Item 13).
5. Install the four screws (Figure 3, Item 3) and the cover (Figure 3, Item 2) on the back of the remote thermostat box (Figure 3, Item 1), making sure that the notch in the edge of the cover (Figure 3, Item 7) is at the bottom of the box.

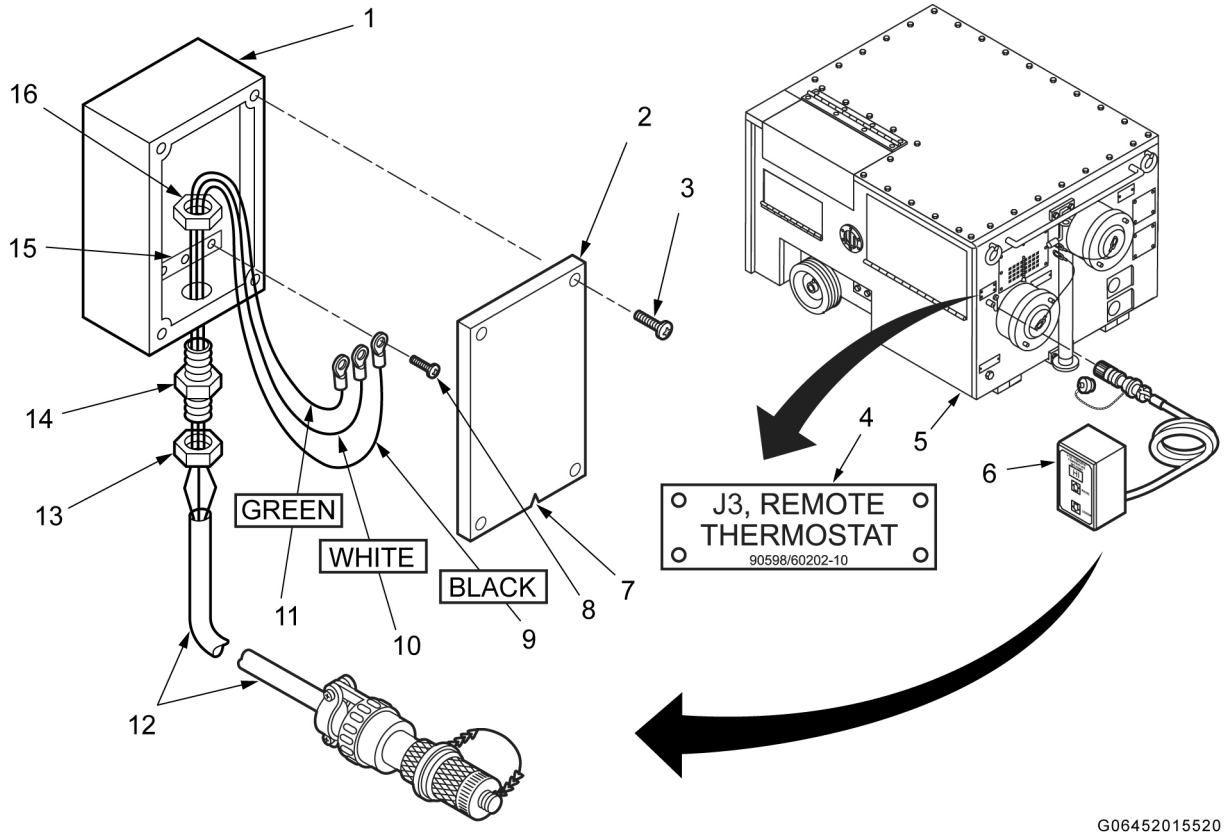


Figure 3. Remote Control Thermostat Assembly.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

POWER CABLE ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Lockwashers (WP 0096, Figure 12, Items 2 and 8)
Straps, Tie-down (WP 0116, Item 14)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

POWER CABLE ASSEMBLY REPAIR

Removal

1. Open the right-side rear door (Figure 1, Item 5) and the larger, right-side front door (Figure 1, Item 6) on the right side of the ASH (Figure 1, Item 7).
2. Tag and disconnect wires (Figure 1, Item 17), (Figure 1, Item 18) and (Figure 1, Item 19) from Terminal Board 1 (TB1) (Figure 1, Item 2) as follows:
   a. Remove the BLACK wire P1-A (Figure 1, Item 18) from position TB1-1.
   b. Remove the WHITE wire P1-B (Figure 1, Item 19) from position TB1-2.
   c. Reconnect any other wires that may have been disconnected at shared terminal points to gain access to the above specified wires.
   d. Remove the nut (Figure 1, Item 14), lockwasher (Figure 1, Item 15), flat washer (Figure 1, Item 16), and the GREEN wire P1-C (Figure 1, Item 17) from the ground post (G1) (Figure 1, Item 1). Discard the lockwasher.
   e. Reconnect any other wires sharing the ground post that may have been disconnected to gain access to the above green ground wire.
3. Remove any wire tie-down straps (Figure 1, Item 3), as required, to free the cable.

POWER CABLE ASSEMBLY REPAIR - (CONTINUED)

4. Loosen the nut (Figure 1, Item 12) holding the wire clamp (Figure 1, Item 13) to the combustion air fan assembly (Figure 1, Item 11) and pull the power cable (Figure 1, Item 8) through the clamp.
5. Loosen the ring nut (Figure 1, Item 9) on the power cable fitting (Figure 1, Item 10) labeled “Electrical Power Lead-In Cable” located on the front panel of the ASH (Figure 1, Item 7) and gently pull the power cable (Figure 1, Item 8) through the fitting (Figure 1, Item 10) from outside the ASH to remove the power cable.

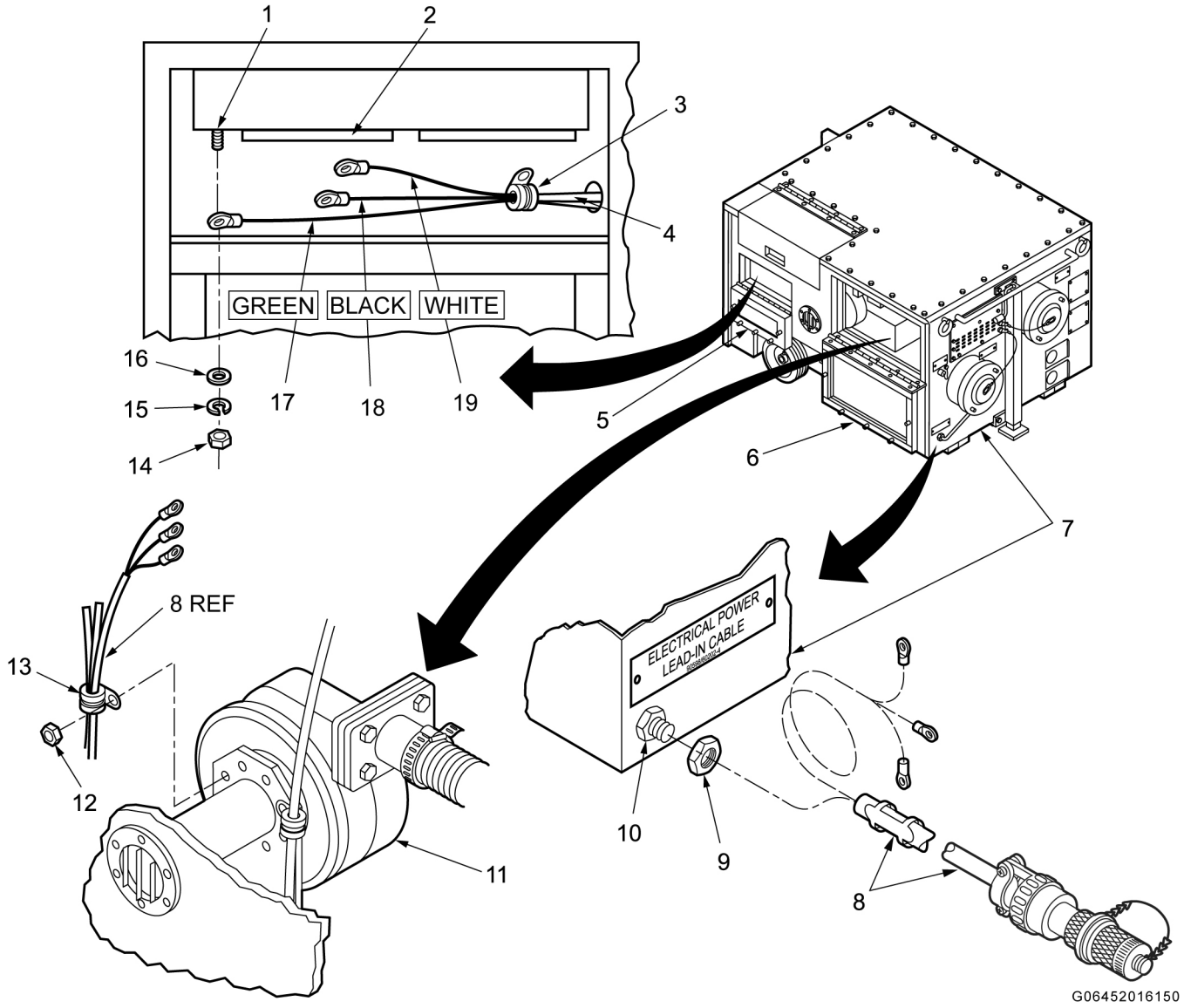


Figure 1. Power Cable Removal.

Inspection

1. Inspect connection for secure mounting, burnt, broken, or bent terminals, and corrosion.
2. Inspect cable for cracked, burned, or deteriorated insulation and exposed conductor.
3. Inspect lug terminals for secure mounting and signs of burning, and corrosion.
4. Inspect fitting on unit for damage.

POWER CABLE ASSEMBLY REPAIR - (CONTINUED)

Repair

Repair of cable assembly consists of replacing damaged parts with new parts. If cable (Figure 2, Item 14) is damaged, the complete assembly must be replaced.

1. Any repair of cable shall proceed as outlined below:
   a. Cut strap (Figure 2, Item 3) from connector plug (Figure 2, Item 2) and remove cover assembly (Figure 2, Item 1).
   b. Remove two bolts (Figure 2, Item 13), two nuts (Figure 2, Item 15), and two saddles (Figure 2, Item 12) from the clamp (Figure 2, Item 11).
   c. Unscrew the clamp (Figure 2, Item 11) and slide the clamp, grommet follower (Figure 2, Item 10), grommet (Figure 2, Item 9), and rubber bushing (Figure 2, Item 7) down on the cable (Figure 2, Item 14).
   d. Unscrew the sleeve (Figure 2, Item 6) from the connector plug (Figure 2, Item 2) and slide the sleeve down on the cable (Figure 2, Item 14).
   e. Tag the three individual wires (Figure 2, Item 4), (Figure 2, Item 5), and (Figure 2, Item 8) that comprise the cable bundle.
   f. Cut the connector plug (Figure 2, Item 2) from the cable (Figure 2, Item 14).
   g. Slide sleeve (Figure 2, Item 6), bushing (Figure 2, Item 7), grommet (Figure 2, Item 9), grommet follower (Figure 2, Item 10), and clamp (Figure 2, Item 11) from the cable (Figure 2, Item 14).
   h. Slide the cable clamp (Figure 2, Item 11), grommet follower (Figure 2, Item 10), grommet (Figure 2, Item 9), rubber bushing (Figure 2, Item 7), and sleeve (Figure 2, Item 6) on the cable (Figure 2, Item 14).
   i. Strip 3/4 inch of insulation from the cable (Figure 2, Item 14) to expose the three insulated conductor wires (Figure 2, Item 4, 5, and 8).
   j. Strip 1/4 inch of insulation from the insulated conductor wires (Figure 2, Item 4, 5, and 8) to expose the three bare metal conductor wires.
   k. Solder the three bare metal conductor wires (Figure 2, Item 4, 5, and 8) into the pins of the connector plug (Figure 2, Item 2) as follows:
      (1) BLACK wire P1-A/TB1-1 (Figure 2, Item 5) to pin A.
      (2) WHITE wire P1-B/TB1-2 (Figure 2, Item 4) to pin B.
      (3) GREEN wire P1-C/G1 (Figure 2, Item 8) to pin C.

NOTE

Firmly hold the connector plug while turning the sleeve assembly to prevent twisting of the conductor wires.

   l. Hold the connector plug tight (Figure 2, Item 2) and slide the sleeve (Figure 2, Item 6) back up the cable (Figure 2, Item 14) and screw the sleeve onto the connector plug (Figure 2, Item 2).
   m. Slide the rubber bushing (Figure 2, Item 7), grommet (Figure 2, Item 9), grommet follower (Figure 2, Item 10), and clamp (Figure 2, Item 11) up the cable (Figure 2, Item 14) until the sleeve (Figure 2, Item 6) is reached. Then, screw the clamp onto the sleeve.

NOTE

The rubber bushing should bulge slightly when the saddles on the clamp are tight.

   n. Position the top and bottom portions of saddles (Figure 2, Item 12) on the clamp (Figure 2, Item 11) and secure in place by installing two bolts (Figure 2, Item 13) and two nuts (Figure 2, Item 15) through the saddles (Figure 2, Item 12).
   o. Insert the strap (Figure 2, Item 3) through end of the chain on the cover (Figure 2, Item 1) and secure onto the connector plug (Figure 2, Item 2).

POWER CABLE ASSEMBLY REPAIR - (CONTINUED)

p. Screw the cover (Figure 2, Item 1) onto the connector plug (Figure 2, Item 2).

2. The repair of the other end of the cable is limited to the replacement of the terminal lugs.

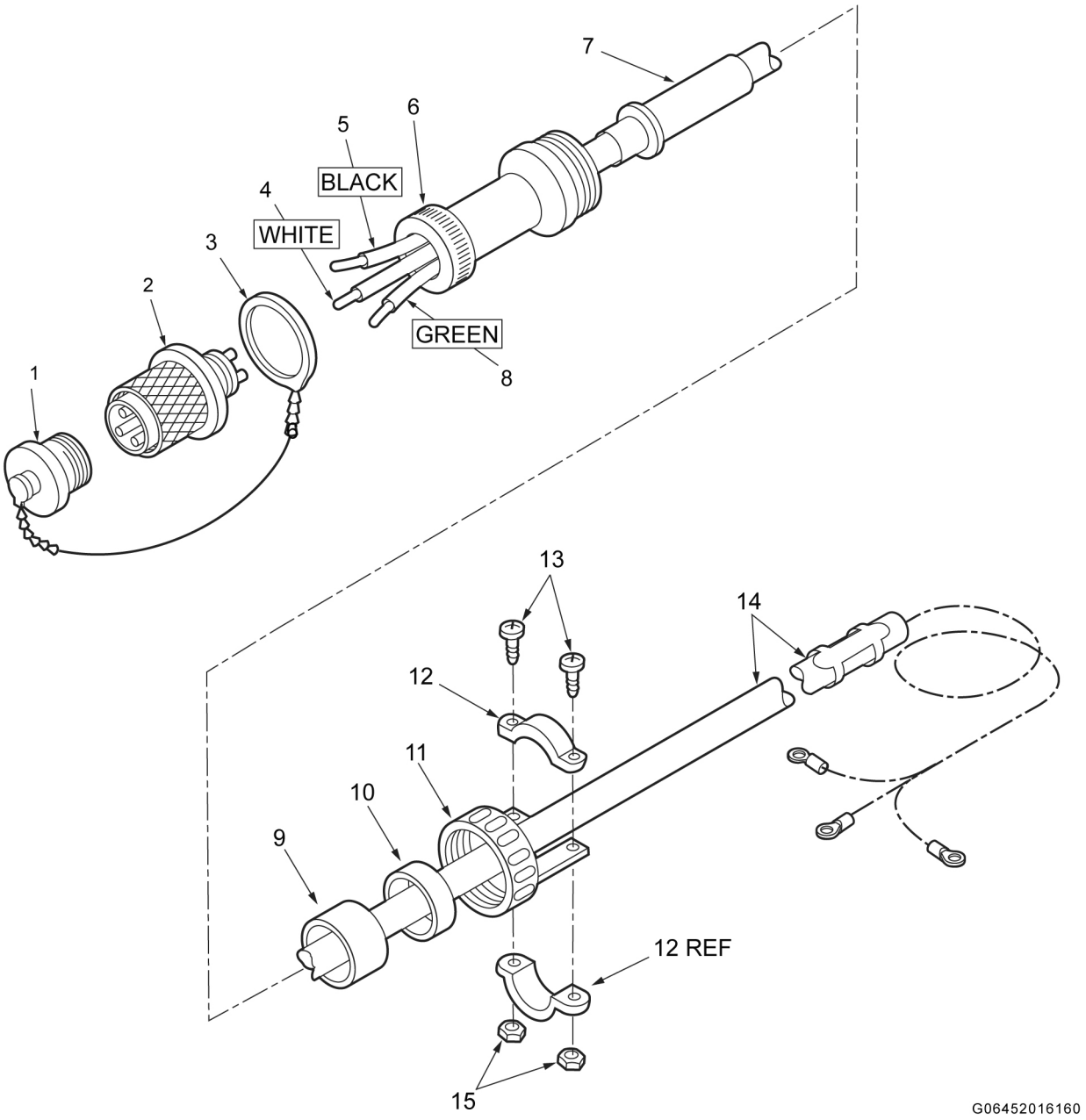


Figure 2. Power Cable Repair.

Installation

1. Insert the power cable (Figure 3, Item 8) into the ASH by gently pushing it through the power cable fitting (Figure 3, Item 10) labeled “Electrical Power Lead-In Cable” located on the exterior front panel of the ASH (Figure 3, Item 7).
2. Route the power cable (Figure 3, Item 8) along the bottom of the ASH, from front to back, and under the combustion air fan assembly (Figure 3, Item 11).

POWER CABLE ASSEMBLY REPAIR - (CONTINUED)

3. From directly underneath the combustion air fan assembly (Figure 3, Item 11), bring the power cable (Figure 3, Item 8) up along side of the fan and feed the power cable (Figure 3, Item 8) through the wire clamp (Figure 3, Item 13) attached to the combustion air fan assembly (Figure 3, Item 11). Be sure to allow enough slack enabling the wires to reach the terminal board (TB1) (Figure 3, Item 2) and the ground post (G1) (Figure 3, Item 1).
4. Connect wires (Figure 3, Item 17), (Figure 3, Item 18) and (Figure 3, Item 19) to terminal board TB1 (Figure 3, Item 2) and ground post G1 (Figure 3, Item 1) as follows:
   a. Connect the Green wire P1-C (Figure 3, Item 17) to the ground post G1 (Figure 3, Item 1) and secure with flat washer (Figure 3, Item 16), new lockwasher (Figure 3, Item 15), and nut (Figure 3, Item 14). Tighten nut sufficiently to ensure a good contact.
   b. Connect the White wire P1-B (Figure 3, Item 19) to TB1 position TB1-2 (Figure 3, Item 2). Tighten nut sufficiently to ensure a good contact.
   c. Connect the Black wire P1-A (Figure 3, Item 18) to TB1 position TB1-1 (Figure 3, Item 2). Tighten nut sufficiently to ensure a good contact.
5. Tie the power cable (Figure 3, Item 8) to the wire bundle (Figure 3, Item 4) using wire tie-down straps (Figure 3, Item 3), as required.
6. Tighten the nut (Figure 3, Item 12) to secure the wire clamp (Figure 3, Item 13) to the combustion air fan assembly (Figure 3, Item 11).
7. Tighten the ring nut (Figure 3, Item 9) on the incoming power cable fitting (Figure 3, Item 10) labeled “Electrical Power Lead-In Cable” located on the exterior front panel of the ASH (Figure 3, Item 7).
8. Close the right-side rear door (Figure 3, Item 5) and the larger, right-side front door (Figure 3, Item 6) on the ASH (Figure 3, Item 7).

POWER CABLE ASSEMBLY REPAIR - (CONTINUED)

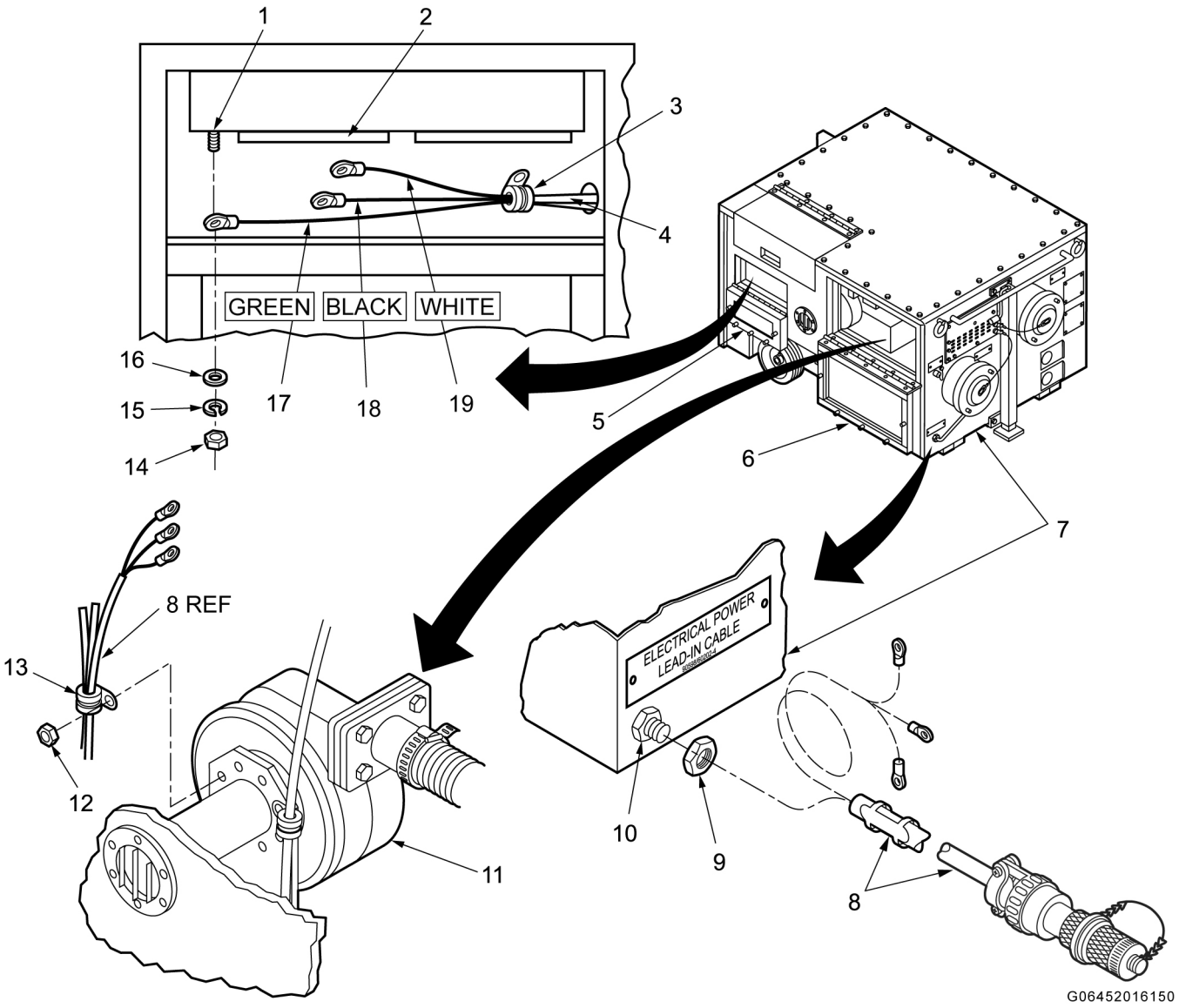


Figure 3. Power Cable Installation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPAIR

INITIAL SETUP:

Tools and Special Tools
Shop Set, Electrical Repair Kit (WP 0117, Item 15)
Soldering Iron (Shop Set, Electrical Repair Kit) (WP 0117, Item 18)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Electrical Receptacle Connector (WP 0103, Figure 32, Item 4)
Electrical Wire (WP 0108, Items 27, 28, and 29)
Tags, Marker (WP 0116, Item 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
Power cable assembly detached from ASH and power supply in accordance with.

WARNING

For artificial respiration, refer to FM 4-25.11, First Aid.

Electrical high voltage cannot be seen but can kill you. Electricity is unlike most other dangerous things you can come in contact with, because it gives no warning and no symptoms to be wary of. Its effect is immediate. It can kill you, render you unconscious, or severely burn you.

To ensure your safety and that of other maintenance personnel, always observe the following precautions:

Do not perform any maintenance on electrical equipment unless all power is removed.

Be certain that there is someone assisting you who can remove power immediately.

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Avoid breathing fumes generated by soldering. Good general ventilation is normally adequate.

Eye protection is required.

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPAIR

Repair of both the external and internal power cable adapter cords is limited to replacing damaged parts with new ones. If the electrical connector assembly is damaged, the complete cable assembly must be replaced.

The repair procedure for both external and internal power cable adapter cords are essentially the same.

Internal Power Cable Adapter Cord (J3) Removal

1. Tag and disconnect wires J3-C/TB3-4 (Figure 1, Item 25), J3-B/TB3-3 (Figure 1, Item 26) and J3-A/TB3-2 (Figure 1, Item 27) from the terminal board 3 (TB3) (Figure 1, Item 17).
2. Tag and disconnect the braided wire (Figure 1, Item 28) from the ground post (Figure 1, Item 29).
3. Remove the wire tie-down straps (Figure 1, Item 18), as required.
4. Slide the internal adapter cord, consisting of wires J3-C, J3-B, J3-A (Figure 1, Item 25, 26, and 27) and the braided ground wire (Figure 1, Item 28), through wire clamps running along the inside top edge of the ASH

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPAIR - (CONTINUED)

frame (Figure 1, Item 24) to the front panel connection labeled “J3 Remote Thermostat” (Figure 1, Item 23) next to the damper grill.

5. Drill out the rivet (Figure 1, Item 21) and remove the cover (Figure 1, Item 22) to the J3 connector (Figure 1, Item 19).
6. Remove the ring nut (Figure 1, Item 20) that secures the head of the J3 connector (Figure 1, Item 19) to the front panel of the ASH.
7. Remove the internal adapter cord.

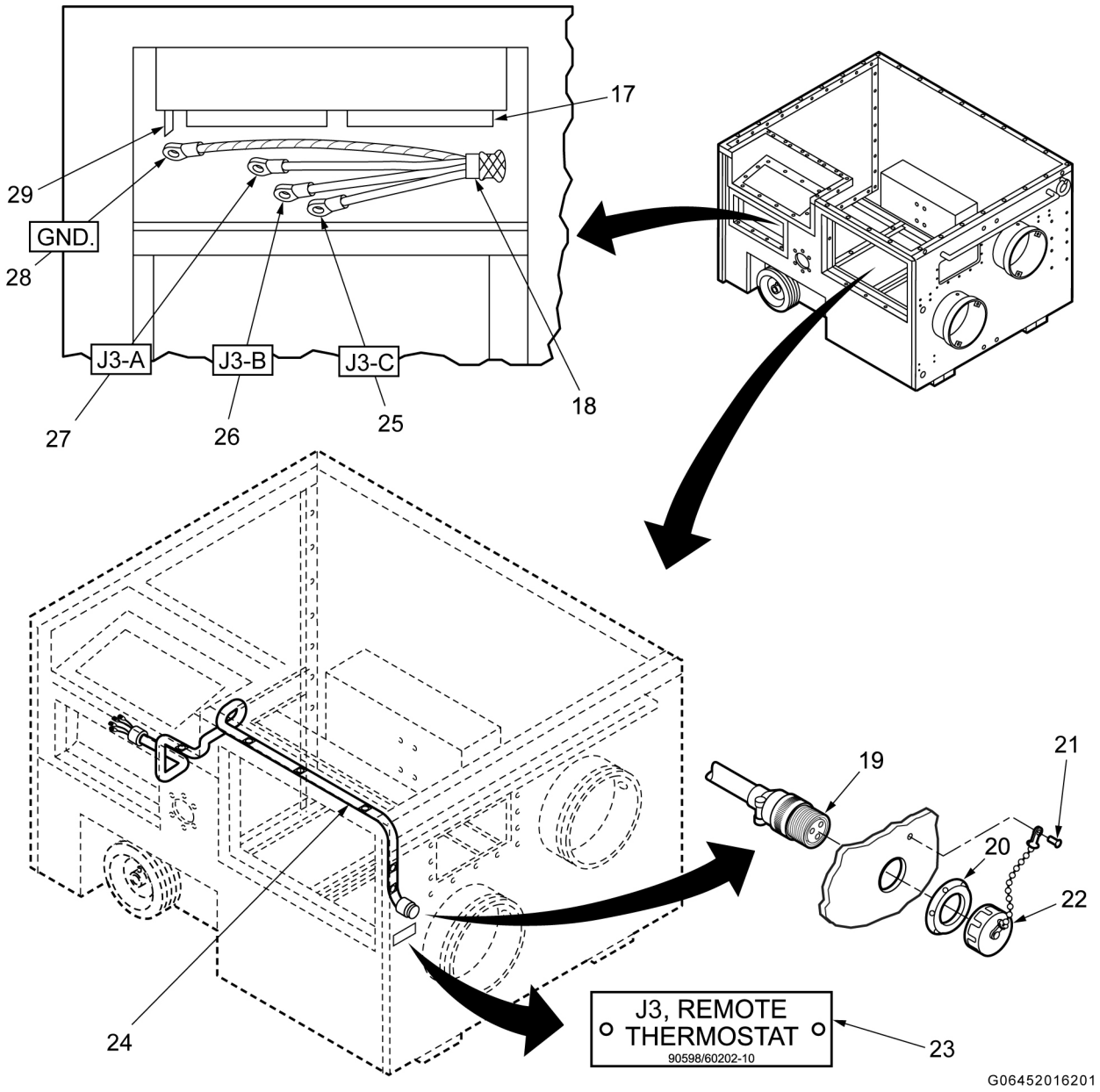


Figure 1. Internal Power Cable Adapter Cord (J3) Removal/Installation.

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPAIR - (CONTINUED)

External/Internal Power Cable Adapter Cord Repair

NOTE

The repair procedure for both external and internal power cable adapter cords are essentially the same.

1. Cut strap (Figure 2, Item 4) from receptacle (Figure 2, Item 3) and remove cover assembly (Figure 2, Item 2).
2. Remove two screws (Figure 2, Item 8), two nuts (Figure 2, Item 14) and two saddles (Figure 2, Item 13).
3. Grasp the connector body (Figure 2, Item 5) and unscrew the electrical-connector backshell (Figure 2, Item 12).
4. Slide the backshell, rubber sleeve (Figure 2, Item 15), bushing follower (Figure 2, Item 7), and bushing (Figure 2, Item 6), away from the connector assembly and off of the wires (Figure 2, Item 9, 10, and 11).
5. Unscrew the connector body (Figure 2, Item 5) from the electrical receptacle (Figure 2, Item 3). Slide the connector body away from the receptacle and off of the wires.
6. Heat the receptacle-pin/wire connections with the soldering iron and remove the wires from the pins.
7. If replacing wires, measure the length of the removed wires to assist in assembly procedure.
8. Cut appropriate lengths of wires from bulk supply: black for the hot lead, white for the neutral, and green for the ground. Tag each wire appropriately.
9. Strip 0.25 inch of insulation from each end of the wires.
10. Solder wires to the pins on the electrical receptacle (Figure 2, Item 3) as follows:
    a. Black wire to pin A.
    b. White wire to pin B.
    c. Green wire to pin C.
11. Thread the wires through the rotating end of the connector body (Figure 2, Item 5) and out the fixed end.
12. Screw the connector body firmly onto the receptacle. Be careful not to cross the threads. Hold the receptacle while turning the connector body to prevent the wires from twisting.
13. Thread the wires through the bushing (Figure 2, Item 6) and insert the bushing into the end of the connector body.
14. Thread the wires through the dished (concave) side of the bushing follower (Figure 2, Item 7). Slide the follower up against the bushing.
15. Thread the wires through the flanged end of the rubber sleeve (Figure 2, Item 15). Slide the sleeve up against the bushing follower.
16. Thread the wires through the threaded end of the backshell (Figure 2, Item 12). Slide the backshell up against the flange on the rubber sleeve.
17. Grasp the connector body firmly and screw the backshell tightly onto the connector. Be careful not to cross the threads.
18. Install the saddles (Figure 2, Item 13) onto the backshell with screws (Figure 2, Item 8) and nuts (Figure 2, Item 14). Note that one screw will go through the saddles from the top down and one from the bottom up. Tighten the screws. The rubber sleeve should bulge slightly when saddles are tight.
19. Insert strap (Figure 2, Item 4) through the free end of the chain on the cover (Figure 2, Item 2) and secure the strap onto the receptacle (Figure 2, Item 3).
20. Screw the cover onto the receptacle.
21. Repair to the other end of the wires is limited to stripping of insulation to expose 0.25 inch of wire and applying solder to each end to prevent fraying.

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPAIR - (CONTINUED)

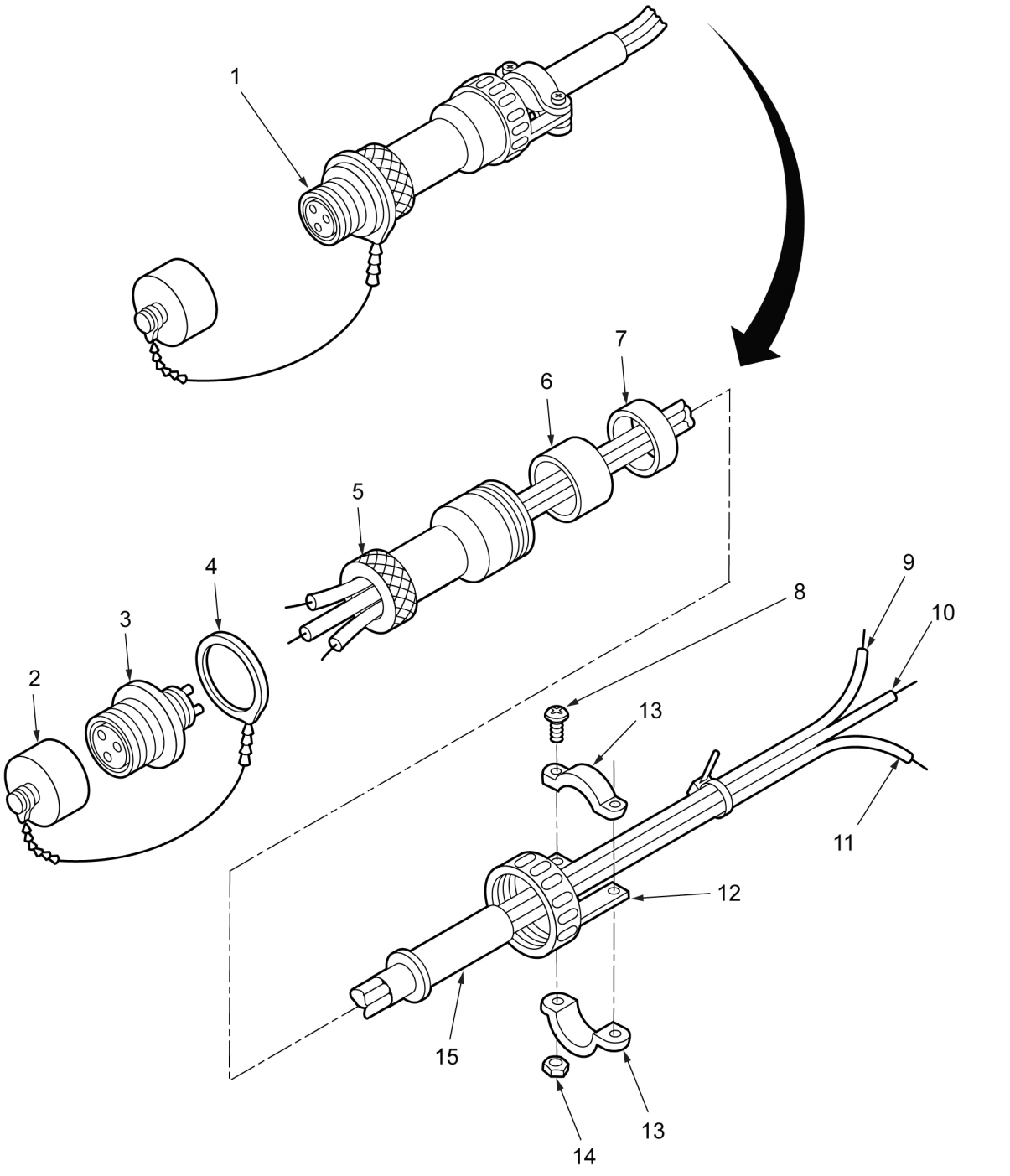


Figure 2. External/Internal Power Cable Adapter Cord Repair.

Internal Power Cable Adapter Cord (J3) Installation

1. Place the wire bundle of the internal power cable adapter cord (Figure 1, Item 19) into the interior of the ASH.
2. Install the J3 connector (Figure 1, Item 19) and ring nut (Figure 1, Item 20) onto the front panel at the proper location marked with nameplate “J3 Remote Thermostat” (Figure 1, Item 23) next to the damper grill. Tighten ring nut sufficiently to secure J3 connector against the front panel.

EXTERNAL AND INTERNAL POWER CABLE ADAPTER CORDS REPAIR - (CONTINUED)

3. Install the rivet (Figure 1, Item 21) that attaches the chain to the front panel of the ASH; then, screw the cover (Figure 1, Item 22) onto the J3 connector (Figure 1, Item 19).
4. Slide the wire bundle, consisting of wires J3-C, J3-B, J3-A (Figure 1, Item 25, 26, and 27) and the braided ground wire (Figure 1, Item 28), through the wire clamps running along the inside top edge of the ASH (Figure 1, Item 24) to the terminal board 3 (TB3) (Figure 1, Item 17).
5. Connect the individual wires (emanating from this J3 wire bundle) to terminal board TB3 (Figure 1, Item 17) as follows:
   a. Connect wire J3-C to TB3-4 (Figure 1, Item 25).
   b. Connect wire J3-B to TB3-3 (Figure 1, Item 26).
   c. Connect wire J3-A to TB3-2 (Figure 1, Item 27).
6. Connect the braided ground wire (Figure 1, Item 28) to the ground post (Figure 1, Item 29) at the terminal box.
7. Install wire tie-down straps (Figure 1, Item 18), as required.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

WHEEL ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Cable (WP 0083, Figure 6)
Cotter Pin (WP 0105, Figure 35, Item 1)
Cotter Pin (WP 0105, Figure 35, Item 5)
Grease (WP 0116, Item 6)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
Wheels in stowed position

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

WHEEL ASSEMBLY REPAIR

Removal

1. Remove the cotter pin (Figure 1, Item 12) and flat washer (Figure 1, Item 9) from the wheel assembly (Figure 1, Item 1). Discard the cotter pin.
2. Remove the pin (Figure 1, Item 10) and the wheel assembly (Figure 1, Item 1) from the pivot (Figure 1, Item 2).
3. Remove the cotter pin (Figure 1, Item 6), flat washer (Figure 1, Item 7), wheel (Figure 1, Item 5) and flat washer (Figure 1, Item 4) from the arm (Figure 1, Item 3). Discard the cotter pin.
4. Remove the pin (Figure 1, Item 10) from the cable (Figure 1, Item 11) only if replacement is necessary.

WHEEL ASSEMBLY REPAIR - (CONTINUED)

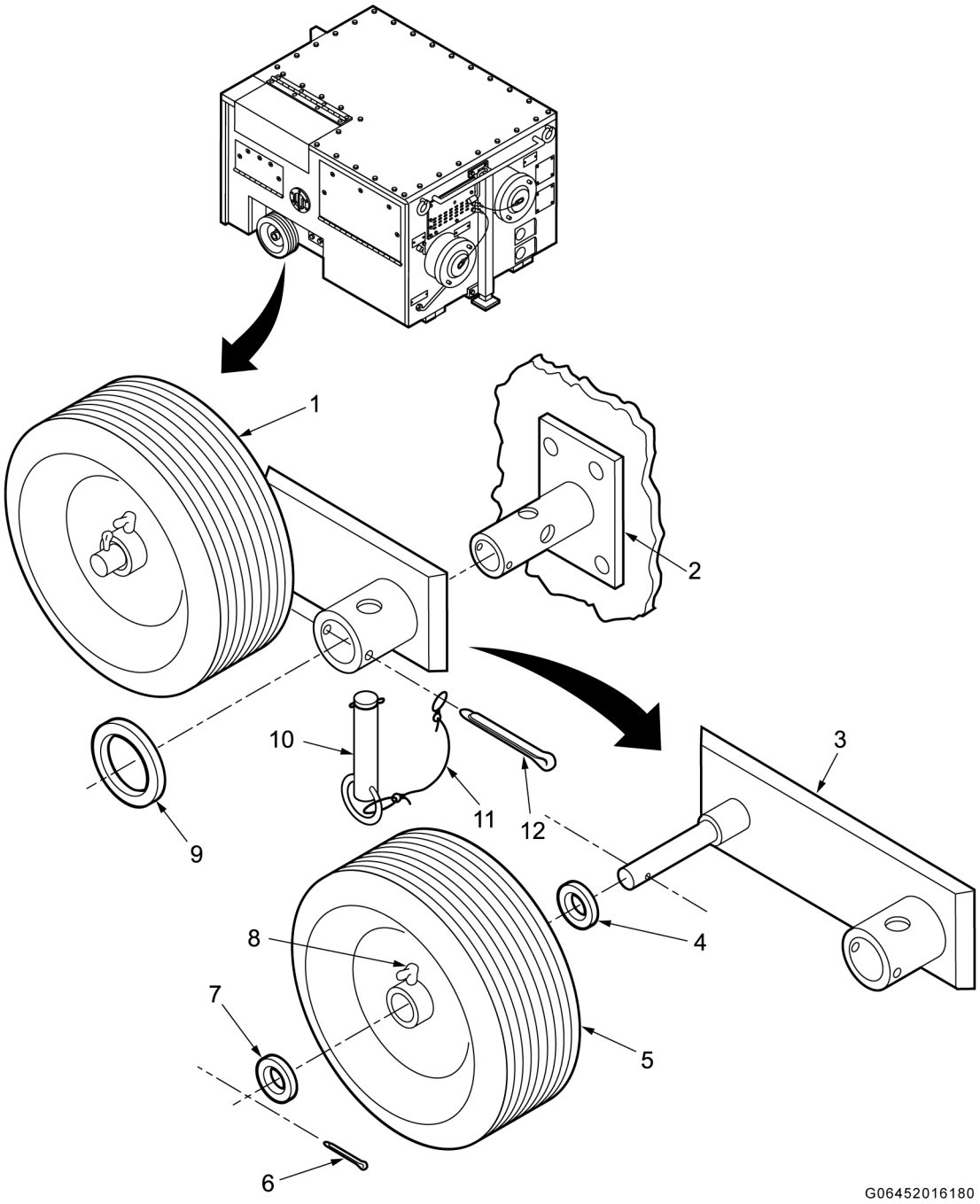


Figure 1. Wheel Assembly Removal/Installation.

Installation

1. Install the pin (Figure 1, Item 10) and the new cotter pin (Figure 1, Item 12) on the cable (Figure 1, Item 11), if necessary.
2. Install the flat washer (Figure 1, Item 4), wheel (Figure 1, Item 5), flat washer (Figure 1, Item 7), and the new cotter pin (Figure 1, Item 6) on the arm (Figure 1, Item 3) to assemble the wheel assembly.
3. Install the wheel assembly (Figure 1, Item 1) on the pivot (Figure 1, Item 2) and install the pin (Figure 1, Item 10) that fastens them together.

WHEEL ASSEMBLY REPAIR - (CONTINUED)

4. Install the flat washer (Figure 1, Item 9) and new cotter pin (Figure 1, Item 12) onto the wheel assembly (Figure 1, Item 1). When properly assembled, the flat washer (Figure 1, Item 9) should be pinched between cotter pin (Figure 1, Item 12) and pin (Figure 1, Item 10) on the wheel assembly.
5. Service grease fitting (Figure 1, Item 8) with grease, as needed.
6. Check/service tire pressure, which should be properly pressurized to 15 PSI.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

DAMPER ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Drill (Tool Set, SATS) (WP 0117, Item 4)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Riveter, Hand, Blind (WP 0113, Item 12)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Backup Washers (WP 0106, Figure 36, Item 16)
Chain, Damper (WP 0082, Figure 1)
Gasket x 2 (WP 0084, Figure 3, Item 1)
Gasket x 2 (WP 0084, Figure 3, Item 2)
Gasket x 2 (WP 0084, Figure 4, Item 1)
Gasket x 2 (WP 0084, Figure 4, Item 2)
Lockwasher (WP 0106, Figure 36, Item 3)
Rivets (WP 0106, Figure 36, Items 7, 13, and 15)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

DAMPER ASSEMBLY REPAIR

Removal

1. Remove the clip (Figure 1, Item 3) and pendant (Figure 1, Item 4) from the chain (Figure 1, Item 2) suspended from the damper grill (Figure 1, Item 9).

NOTE

The damper grill is attached using eight or sixteen sets of fasteners. Remove the quantity of hardware that the configuration requires. Grills are interchangeable between all units.

2. Remove the eight or sixteen screws (Figure 1, Item 7), as required, lockwashers (Figure 1, Item 6), flat washers (Figure 1, Item 5), and two duct cover attaching cables (Figure 1, Item 8) from the grill (Figure 1, Item 9). Discard the lockwashers.
3. Feed the chain (Figure 1, Item 2) through the damper grill (Figure 1, Item 9) while removing the grill from the damper assembly (Figure 1, Item 20).
4. Remove the damper assembly (Figure 1, Item 20) from the frame (Figure 1, Item 1).

DAMPER ASSEMBLY REPAIR - (CONTINUED)

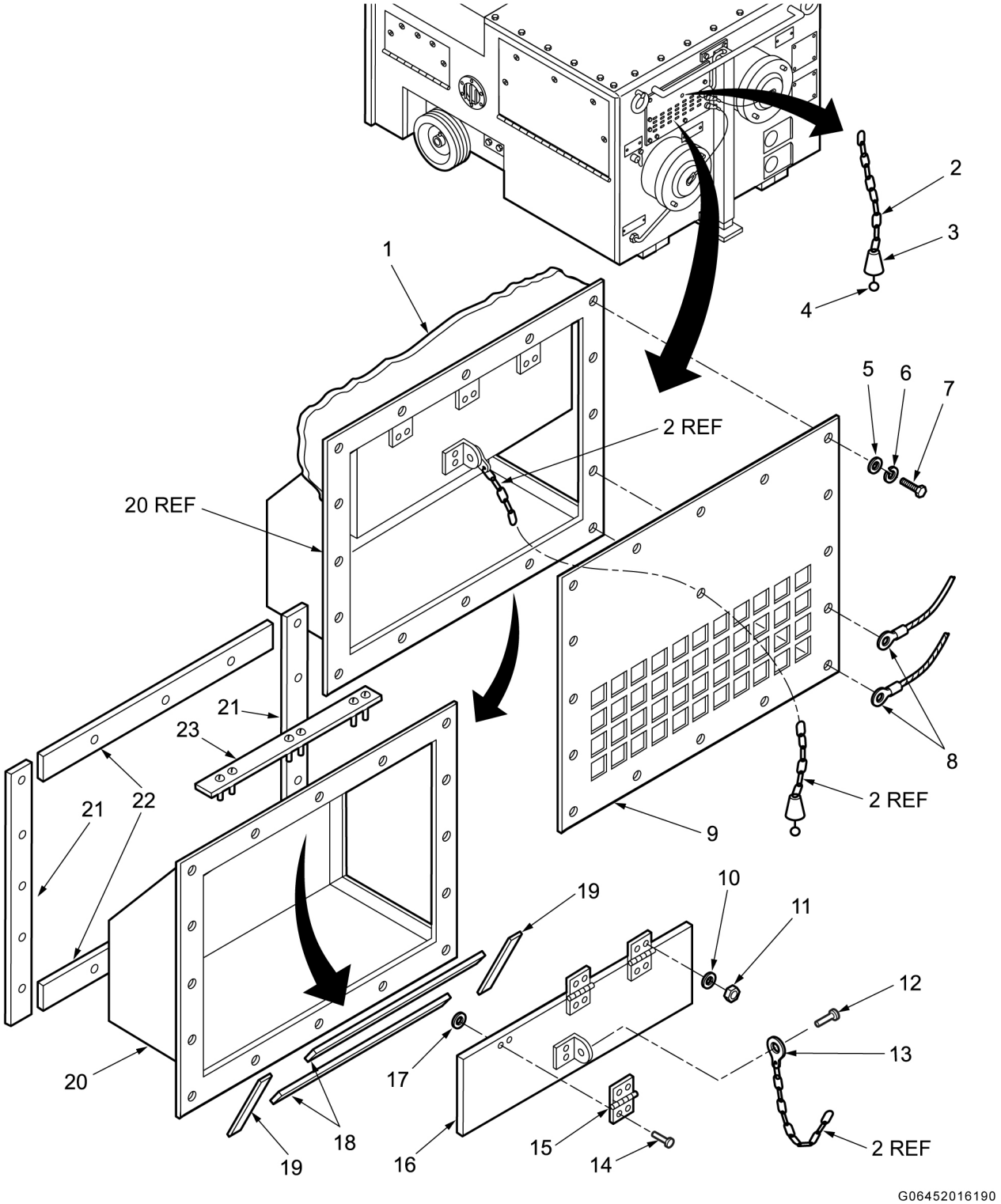


Figure 1. Damper Assembly Removal.

Disassembly

1. Remove the six nuts (Figure 1, Item 11) and six flat washers (Figure 1, Item 10) from the mounting plate (Figure 1, Item 23). Remove the mounting plate and door (Figure 1, Item 16).

DAMPER ASSEMBLY REPAIR - (CONTINUED)

2. Drill out the rivet (Figure 1, Item 12) and remove the chain (Figure 1, Item 2) from the door (Figure 1, Item 16).
3. Remove the clip (Figure 1, Item 13) from the chain (Figure 1, Item 2).
4. Remove the two shorter gaskets (Figure 1, Item 21) and the two longer gaskets (Figure 1, Item 22) cushioning the damper assembly (Figure 1, Item 20) mounting against the frame (Figure 1, Item 1). Discard the gaskets.
5. Remove the two shorter gaskets (Figure 1, Item 19) and the two longer gaskets (Figure 1, Item 18) from inside the damper assembly. Discard the gaskets.
6. Drill out six rivets (Figure 1, Item 14) from the three door hinges and remove six backup plates (Figure 1, Item 17) and three hinges (Figure 1, Item 15) from the door (Figure 1, Item 16). Discard the backup plates.

Assembly

1. Install the two new shorter gaskets (Figure 2, Item 21) and the two new longer gaskets (Figure 2, Item 22) cushioning the damper assembly (Figure 2, Item 20) mounting against the frame (Figure 2, Item 1).
2. Install the two new shorter gaskets (Figure 2, Item 19) and the two new longer gaskets (Figure 2, Item 18) inside the damper assembly (Figure 2, Item 20) for the door assembly (Figure 2, Item 16).
3. Attach the clip (Figure 2, Item 13) on the chain (Figure 2, Item 2).
4. Install the clip (Figure 2, Item 13) and rivet (Figure 2, Item 12) on the door (Figure 2, Item 16).
5. Position the three hinges (Figure 2, Item 15) on the door (Figure 2, Item 16), aligning the holes in the hinges with the holes at the top of the door, and secure by installing two backup plates (Figure 2, Item 17) and two rivets (Figure 2, Item 14) in each hinge (Figure 2, Item 15).
6. Position the mounting plate (Figure 2, Item 23) on the fresh air damper (Figure 2, Item 20); and position the door (Figure 2, Item 16) on the fresh air damper and mounting plate; aligning the holes in the door hinges with the studs/bolts on the mounting plate; and secure with six locknuts (Figure 2, Item 11) and six flat washers (Figure 2, Item 10) on the mounting plate studs/bolts (Figure 2, Item 23), two on each door hinge (Figure 2, Item 15).

DAMPER ASSEMBLY REPAIR - (CONTINUED)

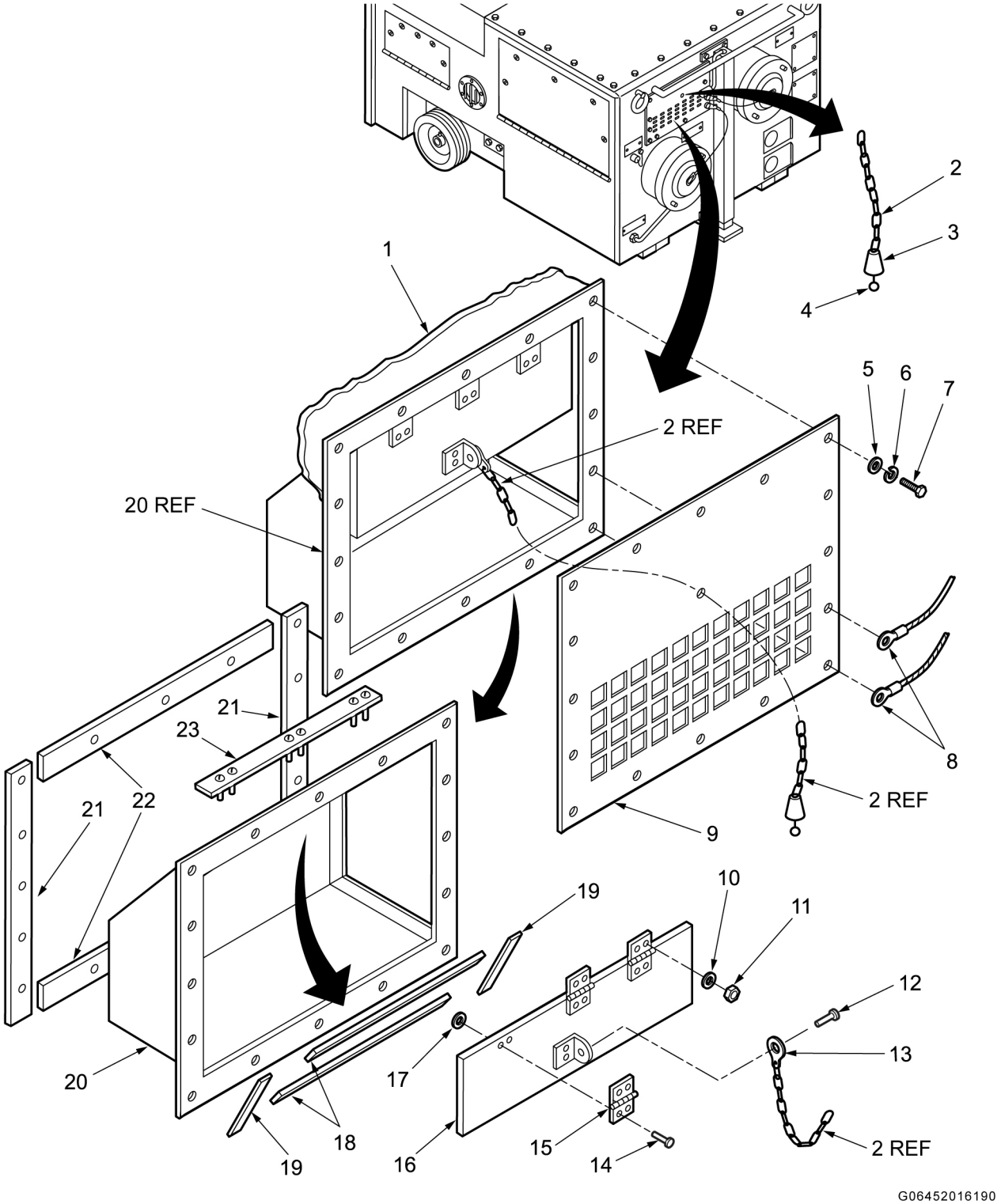


Figure 2. Damper Assembly Installation.

Installation

1. Insert the damper assembly (Figure 2, Item 20) into the frame (Figure 2, Item 1).

DAMPER ASSEMBLY REPAIR - (CONTINUED)

2. Feed the chain (Figure 2, Item 2) through the slot in the damper grill (Figure 2, Item 9) and install the clip (Figure 2, Item 4) and pendant (Figure 2, Item 3) on the chain (Figure 2, Item 2).

NOTE

The grill is attached using eight or sixteen sets of hardware. Install the quantity of fasteners that the configuration requires. Grills are interchangeable between all units.

Do not install screws in the right-hand, bottom two positions of the grill at this time. These two positions must remain open temporarily to attach duct cover cables later in the process.

3. Install, as required, the six or fourteen flat washers (Figure 2, Item 5), six or fourteen new lockwashers (Figure 2, Item 6), and the six or fourteen screws (Figure 2, Item 7) on the grill (Figure 2, Item 9). Tighten fasteners securely.
4. Position the two duct cover attaching cables (Figure 2, Item 8) on the grill (Figure 2, Item 9) one at a time, and secure each with a flat washer (Figure 2, Item 5), new lockwasher (Figure 2, Item 6), and screw (Figure 2, Item 7). Tighten fasteners securely.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

FRAME ASSEMBLY REPAIR

INITIAL SETUP:

Tools and Special Tools
Drill (Tool Set, SATS) (WP 0117, Item 4)
Gasket Punch (Tool Set, SATS) (WP 0117, Item 7)
Riveter, Hand, Blind (WP 0117, Item 10)
Riveter, Hand, Blind (WP 0117, Item 11)
Riveter, Hand, Blind (WP 0117, Item 12)
Shears (Tool Set, SATS) (WP 0117, Item 13)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Materials/Parts
Backup Washers(WP 0107, Figure 40, Item 3)
Cotter Pin (WP 0107, Figure 37, Item 9)
Gasket (WP 0097, Figure 19, Item 6)
Grommet (WP 0084, Figure 1)
Lockwasher (WP 0107, Figure 39, Item 2)
Rivet (WP 0107, Figure 37, Item 1)
Rivet (WP 0107, Figure 38, Item 1)
Rivet (WP 0107, Figure 40, Item 2)
Rivet (WP 0107, Figure 40, Item 5)
Rivnuts (WP 0107, Figure 39, Item 8)
Rivnuts (WP 0107, Figure 40, Items 7 to 11)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (1)

Equipment Condition
ASH disconnected from power source

WARNING

Contact with hot components can cause burns. Allow ASH to cool down before attempting service, inspection, or maintenance activity.

Eyes can be permanently damaged by contact with flying particles. Approved goggles and face shield are required.

Take care in handling the cutting blades and shears to avoid cuts. Failure to do so may result in injury to personnel.

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

Insulation should only be removed when necessary to gain access to another component or when replacement of the insulation is necessary.

FRAME ASSEMBLY REPAIR

Disassembly of Informational Plates

1. Drill out four rivets (Figure 1, Item 16) and remove the handbook compartment (Figure 1, Item 1) from just below the larger, right-side door of the ASH (Figure 1, Item 2).

NOTE

Informational plates are attached to the exterior of the front of the ASH using either two or four rivets each, depending on the size of the plate. Remove the quantity of rivets that the specific plate configuration requires.

2. Drill out two or four rivets (Figure 1, Item 8), as required, on each of the following plates:
   a. Plate SUPPLY CONNECTION (Figure 1, Item 9).

FRAME ASSEMBLY REPAIR - (CONTINUED)

b. Plate ARMY SPACE HEATER (Figure 1, Item 10).
c. Plate LUBRICATION CHART (Figure 1, Item 11).
d. Plate RETURN CONNECTION (Figure 1, Item 12).
e. Plate ELECTRICAL POWER LEAD-IN CABLE (Figure 1, Item 13).
f. Plate J3 REMOTE THERMOSTAT (Figure 1, Item 14).

Disassembly of Lift/Tie-Down Rings

1. The four tie-down rings (Figure 1, Item 15) are attached to the front and rear panels of the ASH frame at the very top corners by two different design methods. The rings are either screwed directly into the frame, or attached using a flat washer, slotted nut, and cotter pin. Remove the tie-down rings from the ASH frame using the method that is consistent with the design configuration used on your unit. Remove the tie-down rings as follows:
   a. For tie-down rings (Figure 1, Item 7) that are screwed directly into the frame, remove by unscrewing the tie-down ring.
   b. For tie-down rings (Figure 1, Item 6) that are attached to the frame with a slotted nut, remove as follows:
      (1) Remove the cotter pin (Figure 1, Item 3) from the slotted nut (Figure 1, Item 4) and discard the pin.
      (2) Remove the slotted nut (Figure 1, Item 4) and flat washer (Figure 1, Item 5) from the threaded end of the tie-down ring (Figure 1, Item 6) inside the ASH.
      (3) With the nut removed, the tie-down ring (Figure 1, Item 6) is now free to be removed from the ASH frame (Figure 1, Item 2).

Disassembly of Internal Power Cable Adapter Cord (J3)

1. Tag and disconnect wires J3-C/TB3-4 (Figure 1, Item 25), J3-B/TB3-3 (Figure 1, Item 26) and J3-A/TB3-2 (Figure 1, Item 27) from the terminal board 3 (TB3) (Figure 1, Item 17).
2. Tag and disconnect the braided wire (Figure 1, Item 28) from the ground post (Figure 1, Item 29).
3. Remove the wire tie-down straps (Figure 1, Item 18), as required.
4. Slide the wire bundle, consisting of wires J3-C, J3-B, J3-A (Figure 1Items 25, 26, and 27) and the braided ground wire (Figure 1, Item 28), through wire clamps running along the inside top edge of the ASH frame (Figure 1, Item 24) to the front panel connection labeled “J3 Remote Thermostat” (Figure 1, Item 23) next to the damper grill.
5. Drill out the rivet (Figure 1, Item 21) and remove the cover (Figure 1, Item 22) to the J3 connector.
6. Remove the ring nut (Figure 1, Item 20) that secures the head of the J3 connector (Figure 1, Item 19) to the front panel of the ASH.
7. Remove the internal power cable adapter cord.

FRAME ASSEMBLY REPAIR - (CONTINUED)

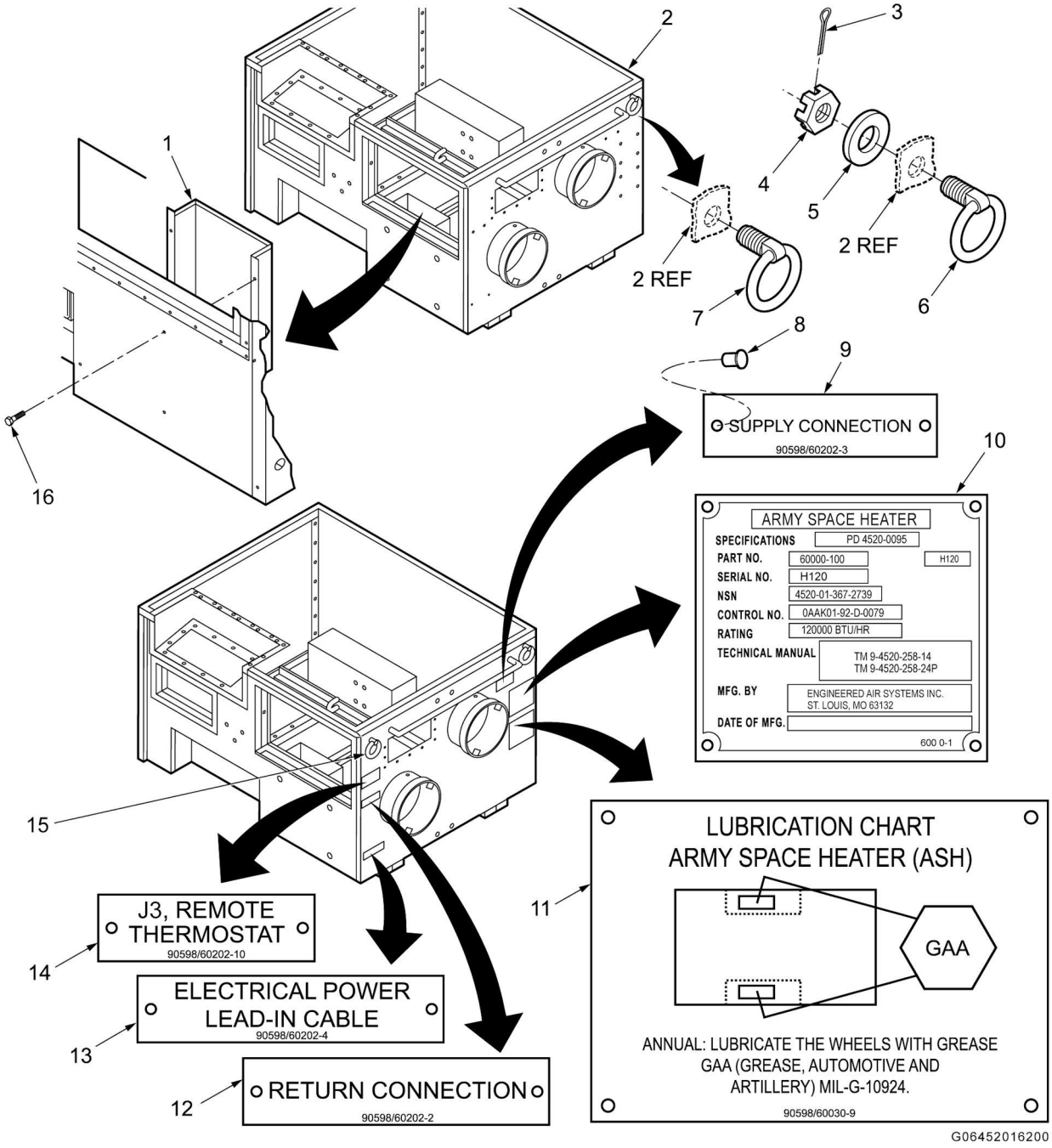


Figure 1. Disassembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3) (Sheet 1 of 2).

FRAME ASSEMBLY REPAIR - (CONTINUED)

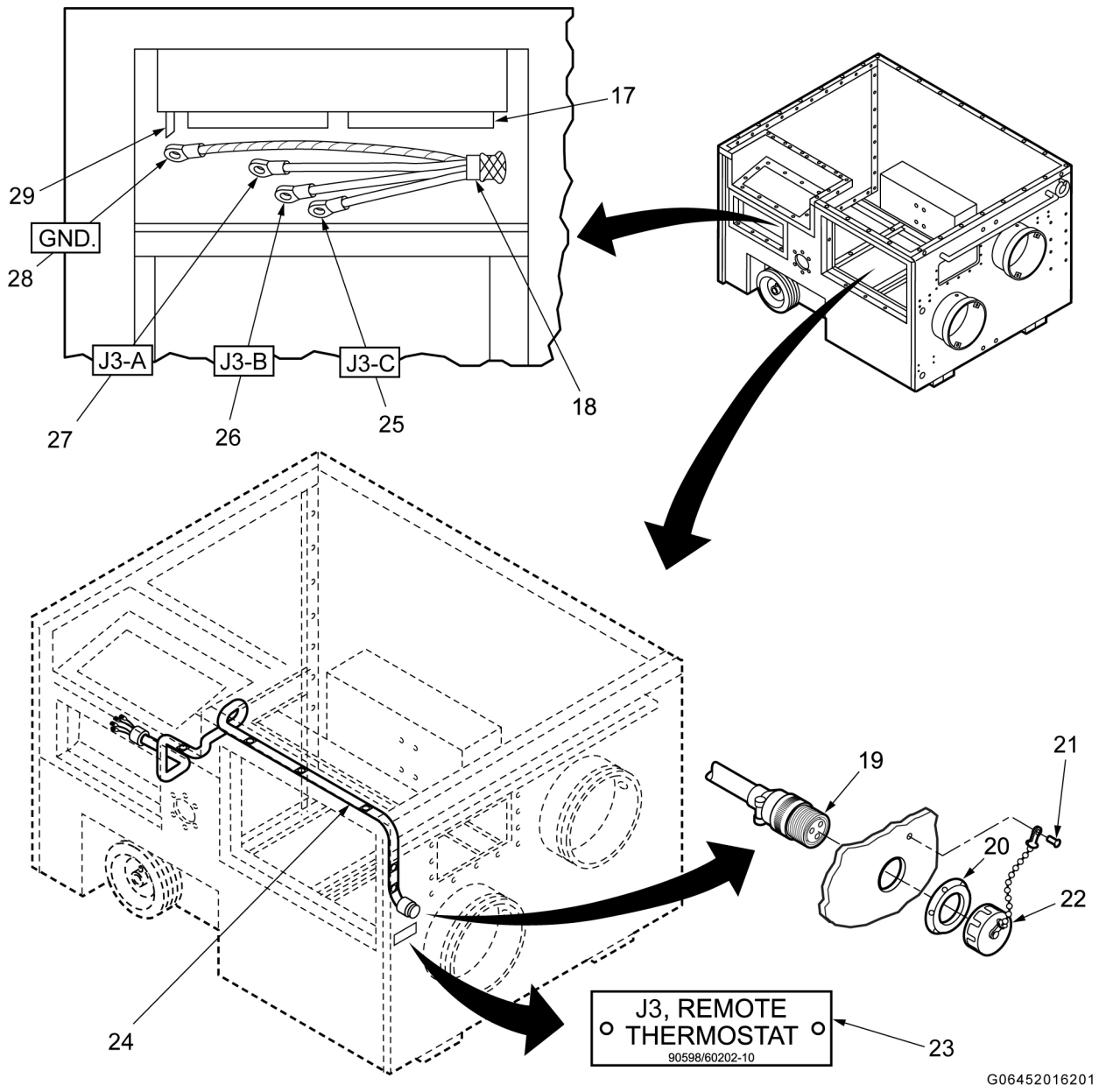


Figure 1. Disassembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3) (Sheet 2 of 2).

Disassembly of Fuel Drain Ring/Cover & Electrical Power Lead-In

1. As a precondition of the disassembly and removal of the fuel drain ring/cover and the electrical power lead-in, the fuel tank has already been removed from the ASH in accordance with WP 0031; and the electrical power cable has already been removed from the ASH in accordance with WP 0044.
2. Remove the four screws (Figure 2, Item 8), four lockwashers (Figure 2, Item 7), and four flat washers (Figure 2, Item 6) that attach the fuel drain cover (Figure 2, Item 5) and gasket (Figure 2, Item 4) to the fuel drain ring (Figure 2, Item 2) on the floor of the ASH frame. The fuel drain cover and gasket are now free to be removed from the ring.
3. Remove the gasket (Figure 2, Item 4) from the fuel drain cover (Figure 2, Item 5). Discard the gasket.

FRAME ASSEMBLY REPAIR - (CONTINUED)

4. Remove eight rivets (Figure 2, Item 3) and eight backup washers (Figure 2, Item 1) that attaches the fuel drain ring (Figure 2, Item 2) to the floor of the ASH frame. The rivets will have to be drilled out. The ring is now free to be removed from the floor of the ASH frame.
5. Remove the nut ring (Figure 2, Item 9), O-ring packing (Figure 2, Item 10), and fitting (Figure 2, Item 11) from the power supply connection labeled “Electrical Power Lead-In Cable” (Figure 2, Item 12) on the front panel of the ASH. Discard the O-ring packing.

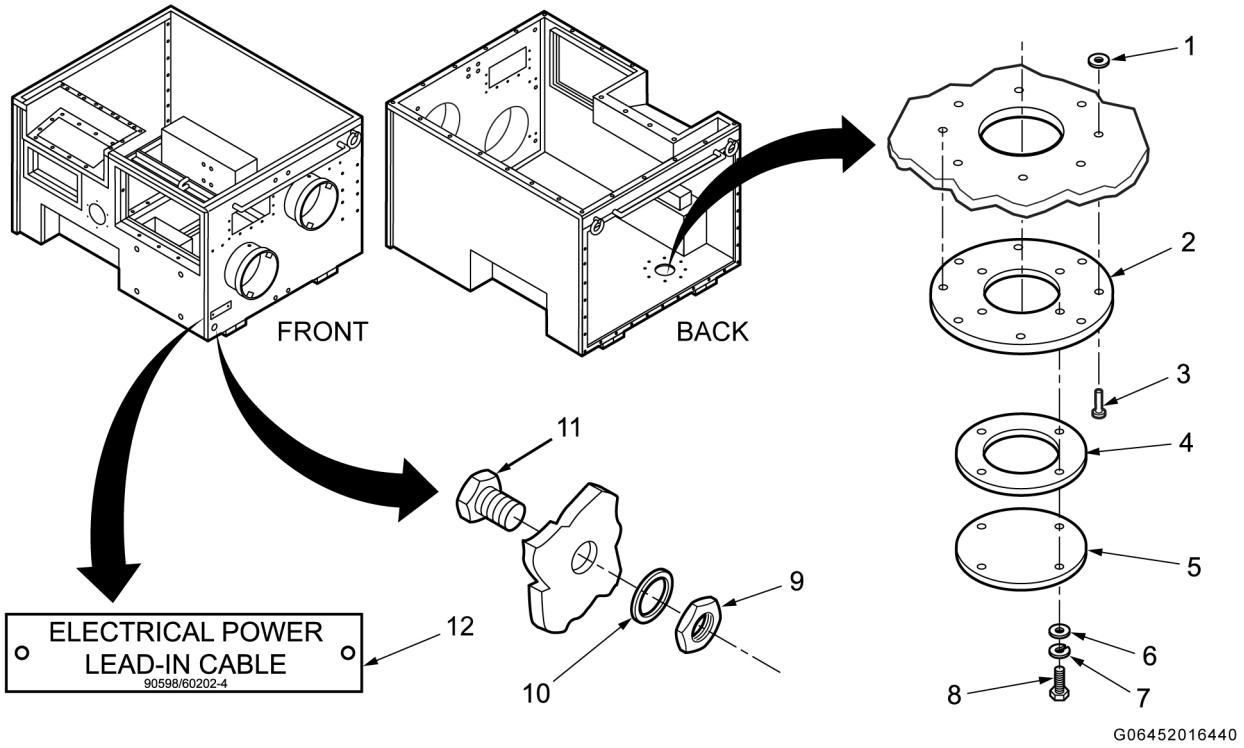


Figure 2. Disassembly of Fuel Drain Ring/Cover & Electrical Power Lead-In.

Disassembly of Heat Exchanger Brace & Grommet

Overview. There are two braces that form the top of the ASH frame. To distinguish between them, the center brace that attaches to the heat exchanger shell via the brace tab will be referred to as the primary brace. This is the brace that comes out when the heat exchanger is removed from the frame. The other brace will be referred to as the secondary brace and is located closer to the rear of the exchanger. This brace, which supports the heat exchanger's Y-shaped clamp, remains stationary and is not removed from the ASH frame. The two braces are clearly identified in Figure 1 in WP 0037 or WP 0038 along with the other major components of the heat exchanger.

As a precondition for the disassembly/removal of the primary brace at this stage of the frame disassembly, the user should recognize that this is addressing a highly unusual condition since the heat exchanger has already been removed from the ASH in accordance with WP 0037 or WP 0038, which calls for removing this brace in the course of removing the heat exchanger. So typically, this brace would not be present in the absence of the heat exchanger in the manner being addressed here. It would normally have been removed when the heat exchanger was removed.

1. Remove one nut (Figure 3, Item 12), one lockwasher (Figure 3, Item 11), two flat washers (Figure 3, Item 9) and one bolt (Figure 3, Item 10) from the far left side of the primary brace (Figure 3, Item 8). Discard the lockwashers.

FRAME ASSEMBLY REPAIR - (CONTINUED)

2. Remove one nut (Figure 3, Item 15), one lockwasher (Figure 3, Item 16), two flat washers (Figure 3, Item 7) and one bolt (Figure 3, Item 6) from the mid-right side of the primary brace (Figure 3, Item 8). Discard the lockwashers.
3. Remove one nut (Figure 3, Item 17), one lockwasher (Figure 3, Item 18), two flat washers (Figure 3, Item 5), ground wire (Figure 3, Item 19), star lockwasher (Figure 3, Item 20), and one bolt (Figure 3, Item 4) from the far-right side of the primary brace (Figure 3, Item 8). Discard the lockwashers.
4. Normally, the last fastener to be removed from the primary brace (Figure 3, Item 8) would be the screw at the brace tab (Figure 3, Item 13) connecting the brace to the heat exchanger. However, with the heat exchanger already removed from the ASH frame while keeping this brace in place, which is not standard practice in accordance with WP 0037 or WP 0038, this screw has already been removed from the brace to free the heat exchanger for removal.
5. The primary brace (Figure 3, Item 8) and the attached exhaust stack grommet (Figure 3, Item 14) are now free to be removed from the ASH frame.
6. The exhaust stack grommet (Figure 3, Item 14) will be removed from the ASH frame with the brace. The maintainer should inspect it for serviceability and evaluate its condition. Depending on its condition, the old grommet may be left in place and reused if it's in good condition; or removed from the brace and replaced with a new one if it's worn or in disrepair, at the discretion of the maintainer.

FRAME ASSEMBLY REPAIR - (CONTINUED)

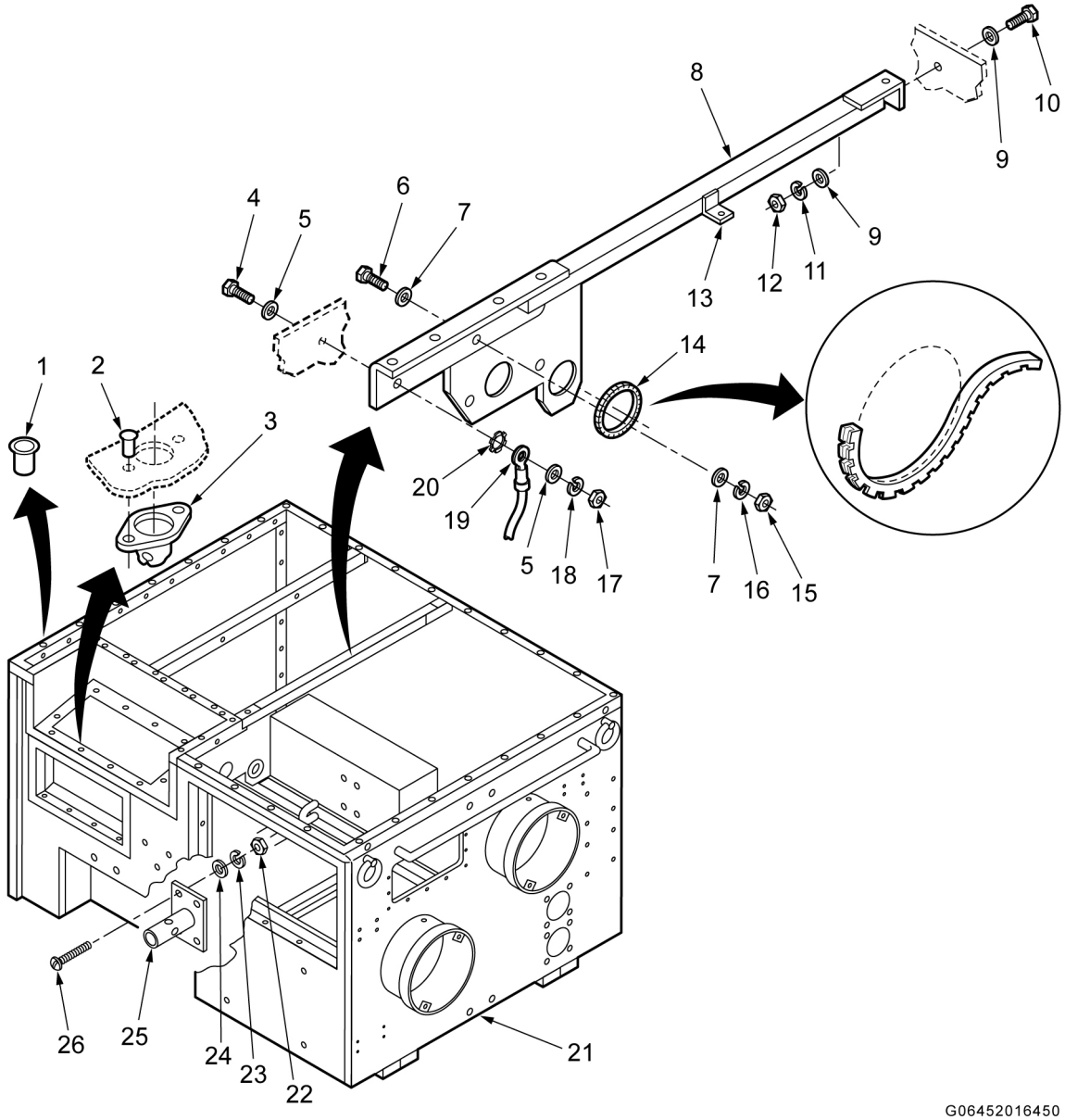


Figure 3. Disassembly of Heat Exchanger Brace and Wheel Pivot.

Removal of Rivnuts and Receptacles

1. Remove power receptacles (Figure 3, Item 3), as required, by drilling out two rivets on each side (Figure 3, Item 2) that secure the receptacles in place on the ASH frame.
2. Remove Rivnuts (Figure 3, Item 1), as required.

Disassembly of Wheel Pivots

1. As a precondition of the disassembly and removal of the wheel pivot from the ASH frame, the wheel assembly consisting of the tire/wheel and the mounting arm have already been removed from the wheel wells of the ASH frame in accordance with WP 0048.

FRAME ASSEMBLY REPAIR - (CONTINUED)

2. Remove the four nuts (Figure 3, Item 22), four lockwashers (Figure 3, Item 23), four flat washers (Figure 3, Item 24), and four bolts (Figure 3, Item 26) that attach the wheel pivot (Figure 3, Item 25) to the ASH frame (Figure 3, Item 21).
3. The wheel pivot (Figure 3, Item 25) is now free to be removed from the ASH frame.

Removal of Insulation

1. Insulation should only be removed when necessary to gain access to another component or when replacement of the insulation is necessary. Insulation locations on the frame assembly are identified in Figure 4 in this work package. The method of using this illustration to find the specifications for a specific piece of insulation in the List of Manufactured Items (WP 0088) is outlined below:
   a. Locate your specific piece of insulation on the ASH frame assembly illustration of Figure 4 in this work package. Note the call out number, which will be referred to in the List of Manufactured Items (WP 0088) as the INDEX number.
   b. Take this INDEX/call-out number from Figure 4 and use it in Table 1 below to find the applicable Frame Insulation Figure in the Illustrated List of Manufactured Items (WP 0088).
   c. Note that INDEX/call out numbers 18 through 38 are for rectangular pieces of insulation whose dimensions are specified in a single Frame Insulation Table in Figure 9 of the List of Manufactured Items (WP 0088); whereas INDEX/call out numbers 39 through 50 will refer to the other specific frame insulation figures in WP 0088.

Table 1. Frame Assembly Insulation: WP 0078, Figure 4 Call-Out Number Cross Reference

Figure 4 Call-Out Number in WP 0078	List Manufactured Items in WP 0088
18 – 38	Figure 9
39	Figure 11
40	Figure 12
41	Figure 13
42	Figure 14
43	Figure 15
44	Figure 16
45	Figure 17
46	Figure 18
47	Figure 19
48	Figure 20
49	Figure 21
50	Figure 21

2. Note also that the ASH's exterior panels – front, back, right-side, and top – are not considered part of the assembly frame, so the insulation for these panels is excluded from Figure 4 in this work package. For your convenience, direction to the List of Manufactured Items (WP 0088) or the Repair Parts and Special Tools List (RPSTL) (WP 0095) for exterior panel insulation is provided separately in Table 2 in this work package.

Table 2. Exterior Panel Insulation Cross Reference

Panel Description	RPSTL Index Number in WP 0095	Illustrated List of Manufactured Items in WP 0088
Rear Panel	Figure 5, Item 46	Figure 1
Rear Panel	Figure 5, Item 44	Figure 4
Top Panel No. 1	Figure 4, Item 5	Figure 5
Top Panel No. 2	Figure 4, Item 6	Figure 6
Top Panel No. 3	Figure 4, Item 7	Figure 7
Right-Side Panel, Front Door	Figure 6, Item 12	Figure 2
Right-Side Panel, Rear Door	Figure 7, Item 12	Figure 3
Left-Side Panel	No insulation	No insulation

FRAME ASSEMBLY REPAIR - (CONTINUED)

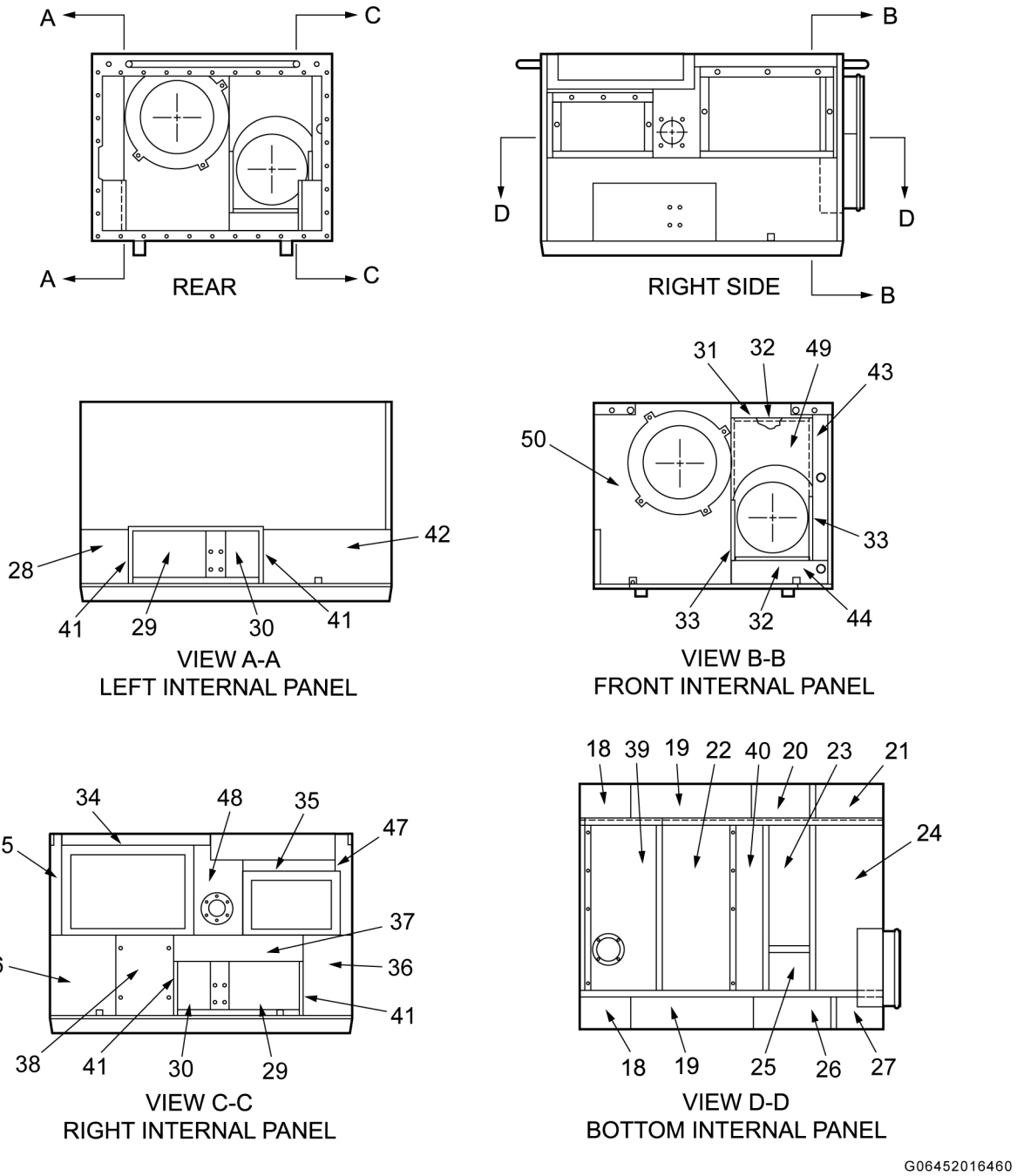


Figure 4. Removal of Insulation.

Inspection

Inspect for cracks, broken locks, missing rivets and fasteners, and broken frame parts.

FRAME ASSEMBLY REPAIR - (CONTINUED)

Repair

Repair is limited to the replacement of defective parts. Disassemble the component only to the extent required to make the repair or replace the defective part. Remove and install the component only when necessary to accomplish the repair.

1. Weld frame as required in accordance with TM 9-237.
2. Paint frame as required in accordance with TM 43-0139.

Assembly of Informational Plates

NOTE

Informational plates are attached to the front panel of the ASH using two or four rivets each, depending on the size of the plate. Install the quantity of rivets that the configuration requires.

1. Install the following informational plates using two or four rivets each (Figure 5, Item 8), as required:
   a. Plate SUPPLY CONNECTION (Figure 5, Item 9).
   b. Plate ARMY SPACE HEATER (Figure 5, Item 10).
   c. Plate LUBRICATION CHART (Figure 5, Item 11).
   d. Plate RETURN CONNECTION (Figure 5, Item 12).
   e. Plate ELECTRICAL POWER LEAD-IN CABLE (Figure 5, Item 13).
   f. Plate J3 REMOTE THERMOSTAT (Figure 5, Item 14).
2. Install the handbook compartment (Figure 5, Item 1) on the interior of the right-side panel just below the larger front door using four rivets (Figure 5, Item 16) through the exterior right-side panel of the ASH.

Assembly of Lift/Tie-Down Rings

1. There are four lift/tie-down rings on the ASH frame (Figure 5, Item 15), two on the front panel and two on the back panel, and two different design methods are used to attach the tie-down rings to the frame. Install the four tie-down rings using the method outlined below that is consistent with the design configuration used on the ASH that you are operating:
   a. If the ASH has tie-down rings (Figure 5, Item 15) that screw directly into frame (Figure 5, Item 7), install the four tie-down rings by screwing the threaded end of the ring directly into the frame. Tighten rings hand tight. Check to determine if the ring hangs down on the exterior panel. If so, that's good and installation is complete. If not, back the nut off sufficiently until the ring hangs down.
   b. If the ASH has tie-down rings (Figure 5, Item 6) that attach to the frame with a slotted nut (Figure 5, Item 4), install the four tie-down rings and nuts as follows:
      (1) Insert the threaded end of the tie-down ring (Figure 5, Item 6) through the frame (Figure 5, Item 2).
      (2) Install the flat washer (Figure 5, Item 5) and the slotted nut (Figure 5, Item 4) on the threaded end of the tie-down ring (Figure 5, Item 6) inside the ASH. Tighten rings hand tight. Check to determine if the ring hangs down on the exterior panel. If so, that's good and installation is complete. If not, back the nut off sufficiently until the ring hangs down.
      (3) Install the cotter pin (Figure 5, Item 3) through the slotted nut (Figure 5, Item 4) and the hole in the threaded end of the tie-down ring (Figure 5, Item 6). Slotted nut may be loosened slightly to align the nearest slot in the nut with the hole in the tie-down ring.

Assembly of Internal Power Cable Adapter Cord (J3)

1. Place the wire bundle of the J3 connector (Figure 5, Item 19) into the interior of the ASH.
2. Install the J3 connector (Figure 5, Item 19) and ring nut (Figure 5, Item 20) onto the front panel at proper location marked with informational nameplate “J3 Remote Thermostat” (Figure 5, Item 23) next to the damper grill. Tighten ring nut sufficiently to secure J3 connector against the front panel.
3. Install the rivet (Figure 5, Item 21) that attaches the chain to the front panel of the ASH; then, screw the cover (Figure 5, Item 22) onto the J3 connector (Figure 5, Item 19).

FRAME ASSEMBLY REPAIR - (CONTINUED)

4. Slide the wire bundle, consisting of wires J3-C, J3-B, J3-A (Figure 5Items 25, 26, and 27), and the braided ground wire (Figure 5, Item 28), through the wire clamps running along the inside top edge of the ASH (Figure 5, Item 24) to the terminal board 3 (TB3) (Figure 5, Item 17).
5. Connect the individual wires (emanating from this J3 wire bundle) to terminal board TB3 (Figure 5, Item 17). as follows:
   a. Connect wire J3-C to TB3-4 (Figure 5, Item 25).
   b. Connect wire J3-B to TB3-3 (Figure 5, Item 26).
   c. Connect wire J3-A to TB3-2 (Figure 5, Item 27).
6. Connect the braided ground wire (Figure 5, Item 28) to the ground post (Figure 5, Item 29) at the terminal box.
7. Install wire tie-down straps (Figure 5, Item 18), as required.

FRAME ASSEMBLY REPAIR - (CONTINUED)

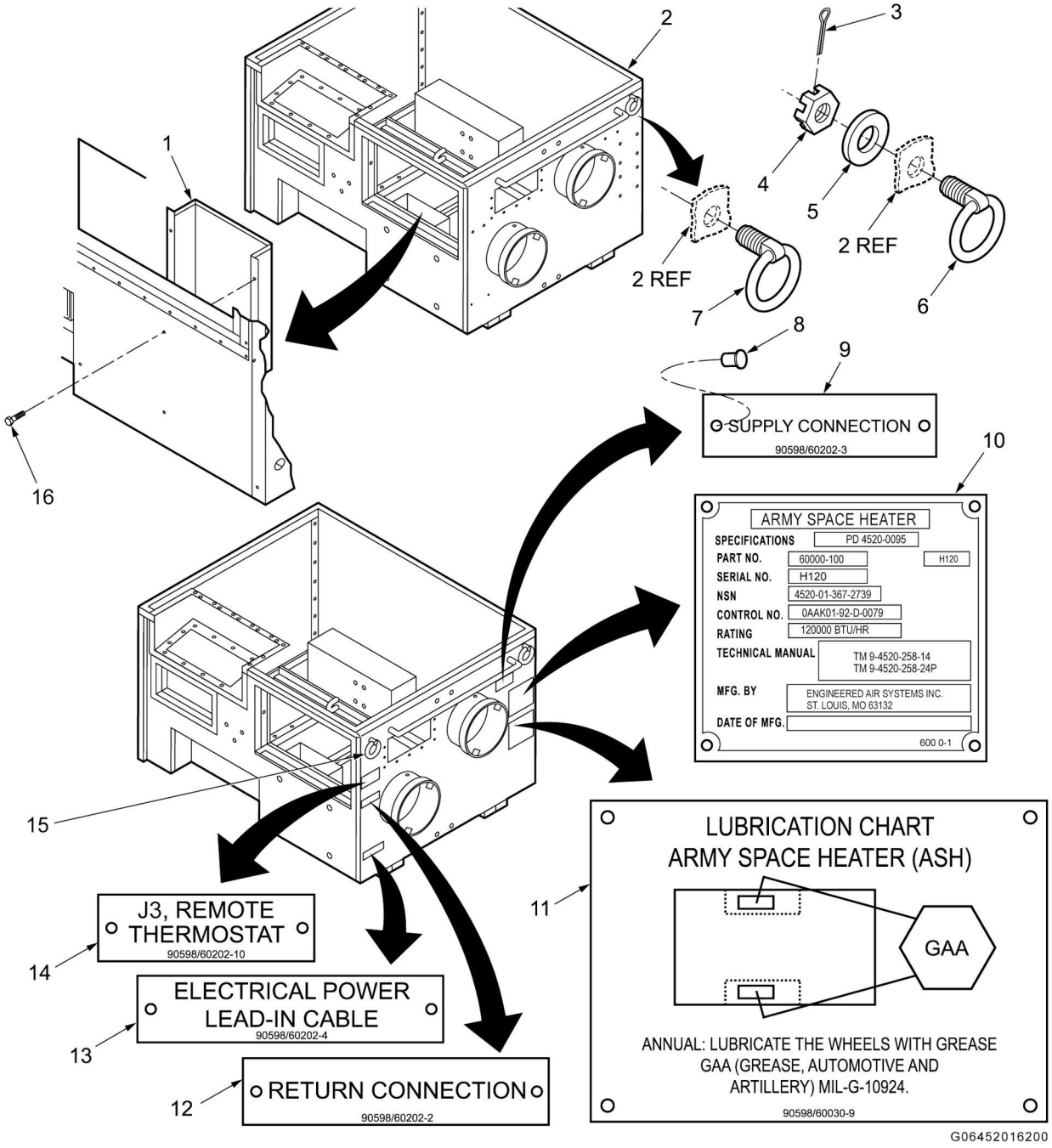


Figure 5. Assembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3) (Sheet 1 of 2).

FRAME ASSEMBLY REPAIR - (CONTINUED)

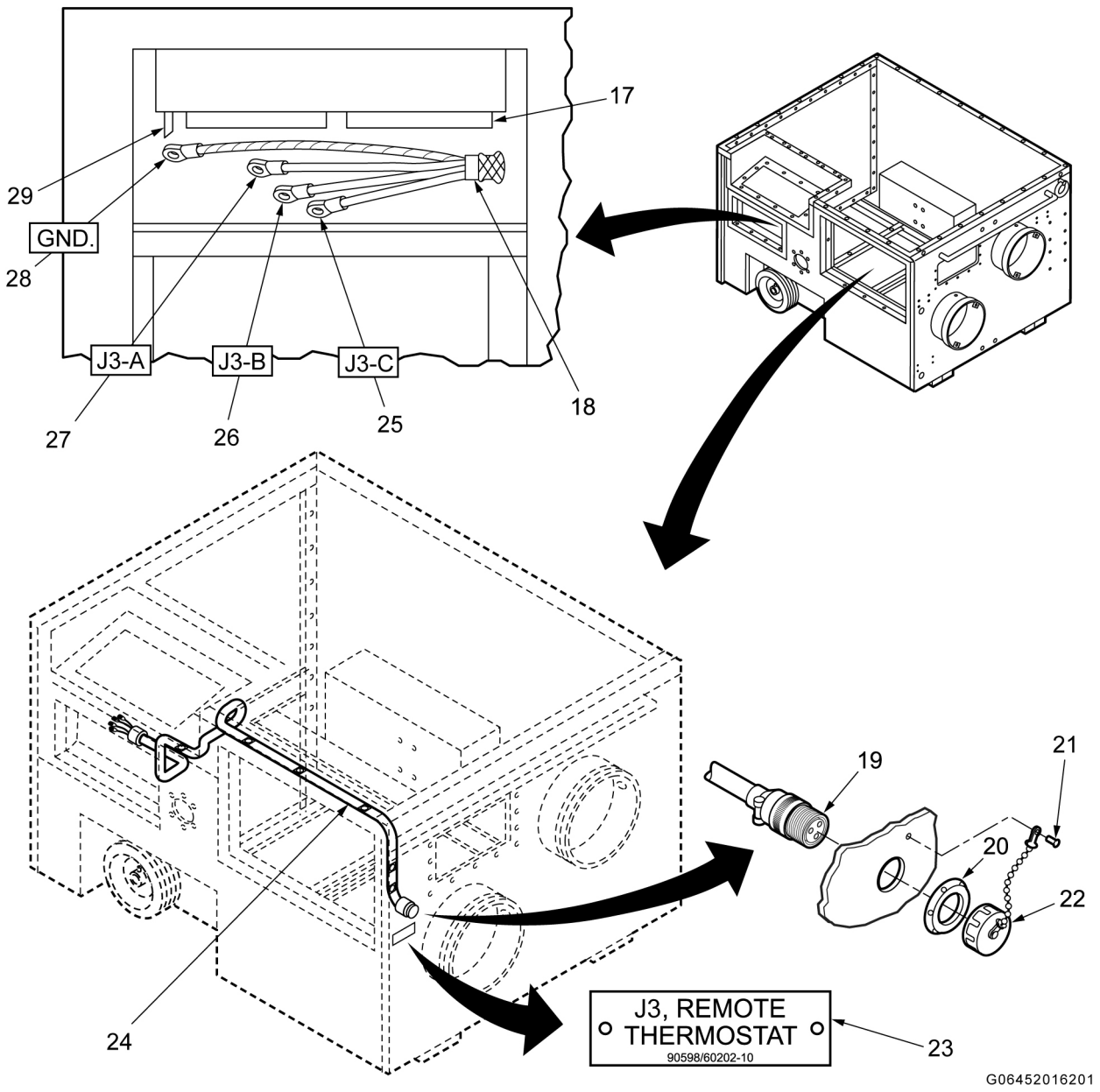


Figure 5. Assembly of Lift Rings, Data Plates, & Internal Power Cable Adapter Cord (J3) (Sheet 2 of 2).

Assembly of Fuel Drain Ring/Cover & Electrical Power Lead-In

As a precondition of the assembly/installation of the fuel drain ring/cover and the electrical power lead-in, the fuel tank is not in the ASH, having been removed from the ASH in accordance with WP 0031; and the electrical power cable is not in the ASH, having been removed from the ASH in accordance with WP 0044.

1. Install the nylon, liquid-tight fitting (Figure 6, Item 11), new O-ring packing (Figure 6, Item 10), and steel ring nut (Figure 6, Item 9) at the power supply connection labeled “Electrical Power Lead-In Cable” (Figure 6, Item 12) on the front panel of the ASH.

FRAME ASSEMBLY REPAIR - (CONTINUED)

2. Install the fuel drain ring (Figure 6, Item 2) on the floor of the ASH frame and secure with eight rivets (Figure 6, Item 3) and eight backup washers (Figure 6, Item 1).
3. Mount the gasket (Figure 6, Item 4) on the drain cover (Figure 6, Item 5), aligning the four holes in the gasket with the holes in the cover.
4. Install the drain cover (Figure 6, Item 5) and gasket (Figure 6, Item 4) on the fuel drain ring (Figure 6, Item 2) and secure with four screws (Figure 6, Item 8), four new lockwashers (Figure 6, Item 7), and four flat washers (Figure 6, Item 6) to the ring on the floor of the ASH frame.

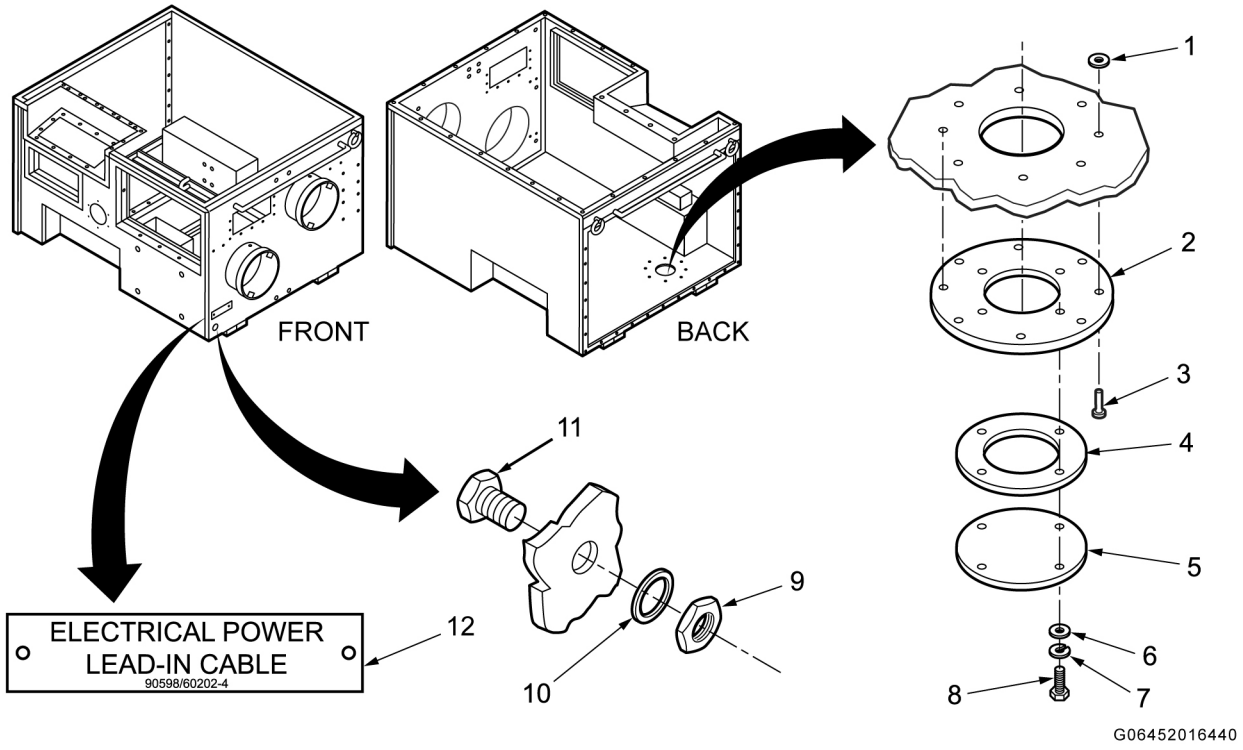


Figure 6. Assembly of Fuel Drain Ring/Cover & Electrical Power Lead-In.

Assembly of Heat Exchanger Brace and Grommet

1. Install two flat washers (Figure 7, Item 9), bolt (Figure 7, Item 10), new lockwasher (Figure 7, Item 11), and nut (Figure 7, Item 12) to secure the left end of the primary brace (Figure 7, Item 8) to the ASH frame.
2. Install two flat washers (Figure 7, Item 5), bolt (Figure 7, Item 4), star lockwasher (Figure 7, Item 20), ground lead (Figure 7, Item 19), new lockwasher (Figure 7, Item 18), and nut (Figure 7, Item 17) to secure the far right side of the primary brace (Figure 7, Item 8) to the ASH frame.
3. Install two flat washers (Figure 7, Item 7), one bolt (Figure 7, Item 6), one new lockwasher (Figure 7, Item 16), and one nut (Figure 7, Item 15) to secure the mid-right side of the primary brace (Figure 7, Item 8) to the ASH frame.
4. The exhaust stack grommet (Figure 7, Item 14) will be installed with the brace. When the brace was removed, the maintainer was instructed to inspect it for serviceability and evaluate its condition. Depending on its condition, the old grommet should be left in place and reused if it's in good condition; or removed from the brace and replaced with a new one if it's worn or in disrepair, at the discretion of the maintainer.

FRAME ASSEMBLY REPAIR - (CONTINUED)

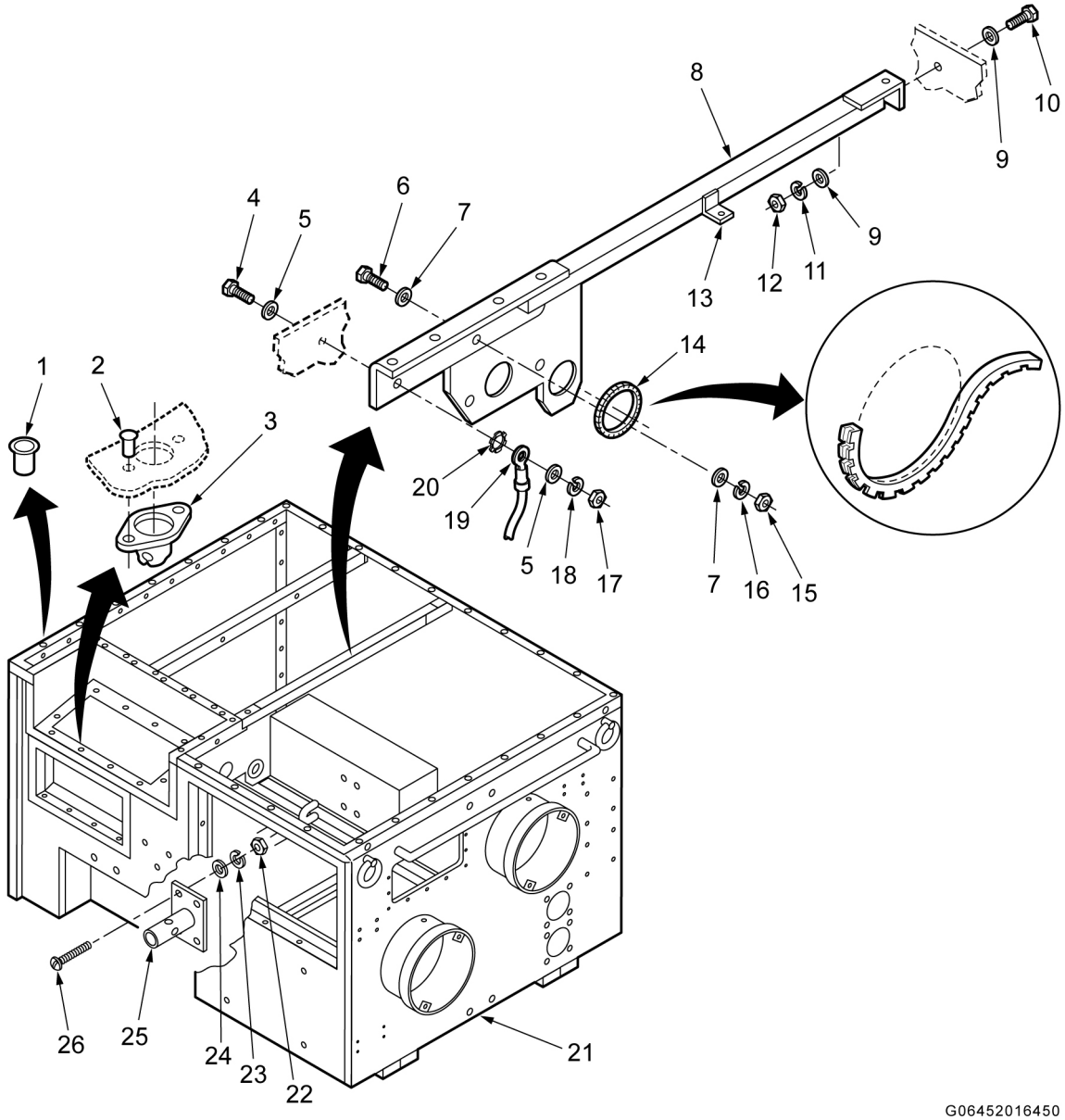


Figure 7. Assembly of Heat Exchanger Brace and Wheel Pivot.

Installation of Rivnuts and Receptacles

1. Remove power receptacles (Figure 7, Item 3), as required, by drilling out two rivets on each side (Figure 7, Item 2) that secure the receptacles in place on the ASH frame.
2. Remove Rivnuts (Figure 7, Item 1), as required.

Assembly of Wheel Pivots

1. Install the four nuts (Figure 7, Item 22), four lockwashers (Figure 7, Item 23), four flat washers (Figure 7, Item 24), and four bolts (Figure 7, Item 26) that attach the wheel pivot (Figure 7, Item 25) to the ASH frame (Figure 7, Item 21).
2. Tighten fasteners firmly to secure wheel pivot (Figure 7, Item 25) to unit frame.

FRAME ASSEMBLY REPAIR - (CONTINUED)

Installation of Insulation

1. Install insulation as required. Installation locations on the frame assembly are identified in Figure 8 in this work package. The method of using this illustration to find the specifications for a specific piece of insulation in the List of Manufactured Items (WP 0088) is outlined below:
   a. Locate your specific piece of insulation on the ASH frame assembly illustration of Figure 8 in this work package. Note the call out number, which will be referred to in the List of Manufactured Items (WP 0088) as the INDEX number.
   b. Take this INDEX/call-out number from Figure 8 and use it in Table 1 below to find the applicable Frame Insulation Figure in the Illustrated List of Manufactured Items (WP 0088).
   c. Note that INDEX/call out numbers 18 through 38 are for rectangular pieces of insulation whose dimensions are specified in a single Frame Insulation Table in Figure 9 of the List of Manufactured Items (WP 0088); whereas INDEX/call out numbers 39 through 50 will refer to the other specific frame insulation figures in WP 0088.

Table 3. Frame Assembly Insulation: WP 0078, Figure 4 Call-Out Number Cross Reference

Figure 4 Call-Out Number in WP 0078	List Manufactured Items in WP 0088
18 – 38	Figure 9
39	Figure 11
40	Figure 12
41	Figure 13
42	Figure 14
43	Figure 15
44	Figure 16
45	Figure 17
46	Figure 18
47	Figure 19
48	Figure 20
49	Figure 21
50	Figure 21

2. Note also that the ASH's exterior panels – front, back, right-side, and top – are not considered part of the assembly frame, so the insulation for these panels is excluded from Figure 8 in this work package. For your convenience, direction to the List of Manufactured Items (WP 0088) or the Repair Parts and Special Tools List (RPSTL) (WP 0095) for exterior panel insulation is provided separately in Table 2 in this work package.

Table 4. Exterior Panel Insulation Cross Reference

Panel Description	RPSTL Index Number in WP 0095	Illustrated List of Manufactured Items in WP 0088
Rear Panel	Figure 5, Item 46	Figure 1
Rear Panel	Figure 5, Item 44	Figure 4
Top Panel No. 1	Figure 4, Item 5	Figure 5
Top Panel No. 2	Figure 4, Item 6	Figure 6
Top Panel No. 3	Figure 4, Item 7	Figure 7
Right-Side Panel, Front Door	Figure 6, Item 12	Figure 2
Right-Side Panel, Rear Door	Figure 7, Item 12	Figure 3
Left-Side Panel	No insulation	No insulation

FRAME ASSEMBLY REPAIR - (CONTINUED)

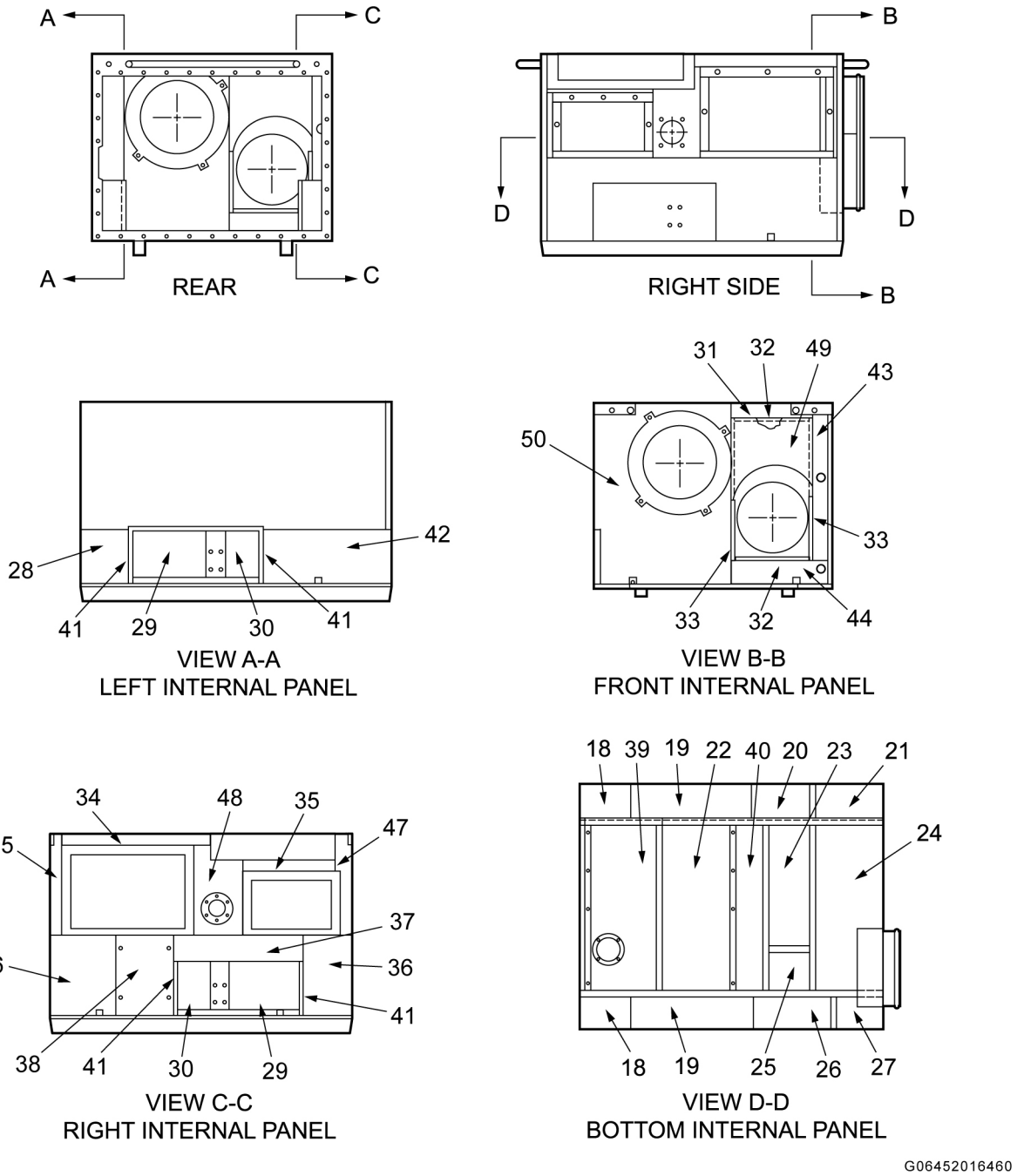


Figure 8. Installation of Insulation.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

PREPARATION FOR STORAGE AND SHIPMENT

INITIAL SETUP:

Tools and Special Tools
Face Shield (Tool Set, SATS) (WP 0117, Item 5)
Tool Kit, General Mechanic's (WP 0117, Item 19)

Personnel Required
Quartermaster and Chemical Equipment Repairer, 91J - (2)

References
AR 190-11
AR 190-13
AR 190-16
FM 10-67-1

SECURITY PROCEDURES

Refer to AR 190-13 or AR 190-16.

PREPARATION FOR MOVEMENT

WARNING

For fuel spills, refer to FM 10-67-1, Concepts and Equipment of Petroleum Operations.

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection is required. Avoid repeated/prolonged contact. Use only in well-ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Be sure a fire extinguisher is available.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on clothes, leave the refueling area as soon as possible, remove clothes, and wash skin with warm, soapy water before getting dressed.

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Improper positioning of external fuel source can cause fuel tank to overflow. Stop refueling immediately if fuel spill occurs.

1. Disconnect and stow ducts. Install dust covers.
2. Disconnect and stow electric power cable adapter cord. Wrap electric power cable around outlet duct openings.
3. Disconnect and stow remote thermostat control.
4. Remove and stow exhaust stack. Install exhaust port cover.
5. Dispose of contaminated fuel per FM 10-67-1.
6. If used, disconnect and drain residual fuel from hose. Install plug and cap on hose. Stow external fuel hose. Install dust cap on external fuel port on heater.

END OF TASK

ADMINISTRATIVE STORAGE

Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness within 24 hours or within the time factors as determined by the directing authority. During the storage period, appropriate maintenance records will be kept. Before placing equipment in administrative storage, current preventative maintenance checks and services should

PREPARATION FOR STORAGE AND SHIPMENT - (CONTINUED)

be completed, shortcomings and deficiencies should be corrected and all Modification Work Orders (MWO's) should be applied. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, conex containers and other containers may be used.

END OF TASK

END OF WORK PACKAGE

FIELD MAINTENANCE

LUBRICATION INSTRUCTIONS

INITIAL SETUP:

Personnel Required
Quartermaster and Chemical Equipment Repairer,
91J - (1)

LUBRICATION INSTRUCTIONS

These lubrication instructions are for field maintenance. Refer to Table 1 and Figure 1 for lubricant of ASH wheels. Lubrication intervals (on-condition or hard time) are based on normal operation. Lubricate more frequently during constant use and less during inactive periods. The man-hour specified is the time you need to do all the services prescribed for a particular interval. Use the correct grade of lubricant for the seasonal temperature expected.

Lubrication interval and symbol: S = Semiannually or as required.

Before you start your lubrication:

ALWAYS

1. Clean grease fitting before lubrication.
2. After lubrication, wipe off excessive grease from fittings to prevent build-up of dirt, grit, and contaminants.

NEVER

1. Use wrong type/grade grease.
2. Use too much lubricant.

LUBRICATION INSTRUCTIONS - (CONTINUED)

Table 1. Lubricant for Wheels

Nomenclature/ Temperature Range	Lubricant Mil Symbol (NATO Code) Specification	Capacity	Interval	Man-hour
Grease Fittings: –65 to 356 °F (–54 to 180 °C) (Apply grease to grease fittings)	GAA (G-403) MIL-G-10924	As Required	S	0.5

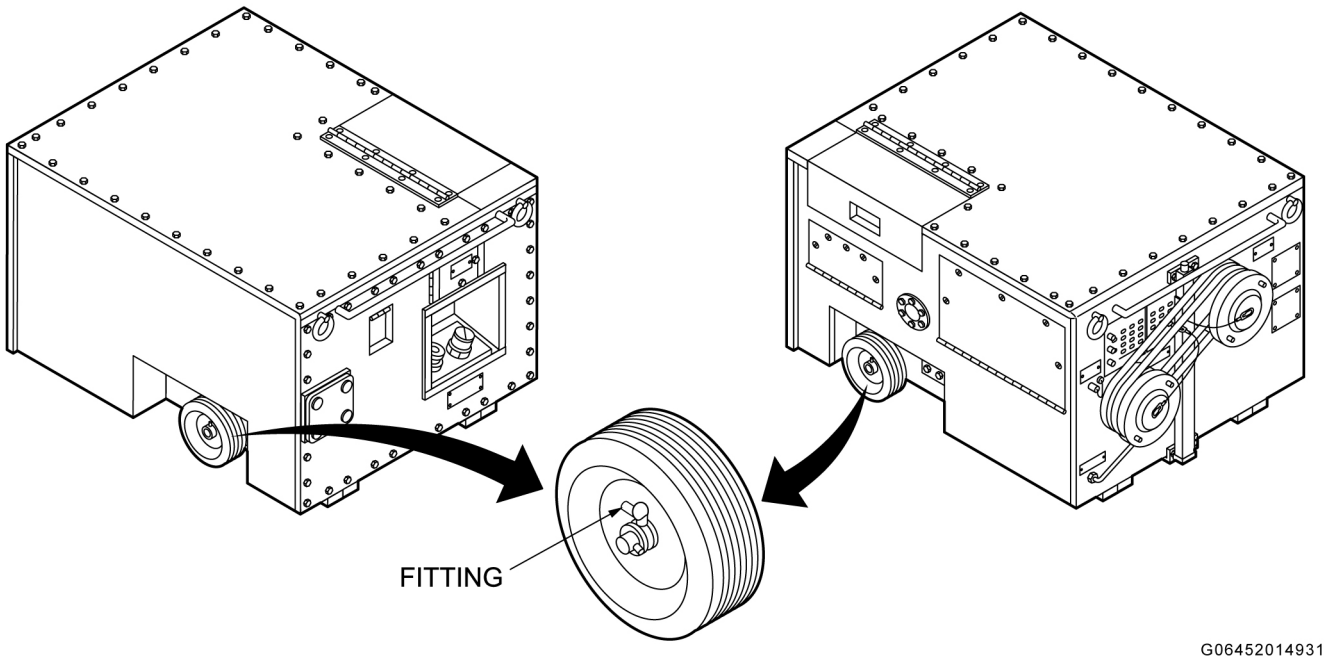


Figure 1. Lubricating the ASH Wheels.

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION

INTRODUCTION

This work package includes complete instructions for making items authorized to be manufactured or fabricated at the field maintenance level.

How To Use The Index Of Manufactured Items

A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the information which covers fabrication criteria.

Explanation Of The Illustrations Of Manufactured Items

All instructions needed by maintenance personnel to manufacture the item are included on the illustrations. All bulk materials needed for manufacture of an item are listed by part number or specification number in a tabular list on the illustration.

Manufactured Items Part Number Index

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
13211E8322 97403	WP 0082, Figure 1	CHAIN ASSEMBLY ()	
13229E8567-2 97403	WP 0091, Figure 1	WIRE, ELECTRICAL MAKE FROM P/N M5086–1–12–0, CAGEC 81343, CUT TO LENGTH ()	
13229E8567-3 97403	WP 0091, Figure 1	WIRE, ELECTRICAL MAKE FROM P/N M5086–1–12–9, CAGEC 81343, CUT TO LENGTH ()	
13229E8567-4 97403	WP 0091, Figure 1	WIRE, ELECTRICAL MAKE FROM P/N M5086–1–12–5, CAGEC 81343, CUT TO LENGTH ()	
60000-158 90598	WP 0084, Figure 1	GASKET MAKE FROM P/N 0050D, CAGEC 17217, CUT TO 16 INCH LENGTH (MAKE FROM BULK ITEM 5) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60032-2 90598	WP 0084, Figure 2, Index #1	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX39.50L (MAKE FROM BULK ITEM 17) ()	
60032-3 90598	WP 0084, Figure 2, Index #2	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX47.42L (MAKE FROM BULK ITEM 17) ()	
60032-4 90598	WP 0084, Figure 2, Index #3	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX13.00L (MAKE FROM BULK ITEM 17) ()	
60032-5 90598	WP 0084 Figure 2, Index #4	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX20.50L (MAKE FROM BULK ITEM 17) ()	
60032-6 90598	WP 0084, Figure 2, Index #5	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX24.12L (MAKE FROM BULK ITEM 17) ()	
60033-1 90598	WP 0086, Figure 1, Index #1	HINGE, TOP COVER MAKE FROM P/N MS20257C3–4800, CAGEC 96906, CUT TO 20.5 INCHES (MAKE FROM BULK ITEM 7) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60075-1 90598	WP 0089, Figure 1	TUBE, DRAIN MAKE FROM P/N AA00037, CAGEC 86228, CUT TO 18.50 INCHES (MAKE FROM BULK ITEM 22) ()	
60079–1 90598	WP 0089, Figure 2	TUBE, NONMETALLIC MAKE FROM P/N 44–P YELLOW, CAGEC 30327, CUT TO 11.25 INCHES (MAKE FROM BULK ITEM 21) ()	
60105-5 90598	WP 0084, Figure 3, Index #1	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 8.5 INCHES ()	
60105-6 90598	WP 0084, Figure 3, Index #2	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 2.88 INCHES ()	
60106-8 90598	WP 0084, Figure 4, Index #2	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 10.75 INCHES ()	
60106-9 90598	WP 0084, Figure 4, Index #1	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 7.88 INCHES ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60140-21 90598	WP 0088, Figure 9, Index #38	INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 8.75WX13.50L (MAKE FROM BULK ITEM 13) ()	
60169-1 90598	WP 0088, Figure 1	INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 24.50WX36.00L (MAKE FROM BULK ITEM 13) ()	
60174-1 90598	WP 0088, Figure 2	INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 13.70WX21.80L (MAKE FROM BULK ITEM 13) ()	
60175-1 90598	WP 0088, Figure 3	INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 9.57WX15.81L (MAKE FROM BULK ITEM 13) ()	
60179-1 90598	WP 0088, Figure 4	INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 8.50WX11.50L (MAKE FROM BULK ITEM 13) ()	
60188-1 90598	WP 0088, Figure 5	INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 9.50WX24.12L (MAKE FROM BULK ITEM 13) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60188-2 90598	WP 0088, Figure 6	INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 9.50WX24.12L (MAKE FROM BULK ITEM 13) ()	
60188-3 90598	WP 0088, Figure 7	INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 22.68WX35.75L (MAKE FROM BULK ITEM 13) ()	
60203-2 90598	WP 0084, Figure 2, Index #1	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX39.50L (MAKE FROM BULK ITEM 17) ()	
60203-3 90598	WP 0084, Figure 2, Index #2	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX47.42L (MAKE FROM BULK ITEM 17) ()	
60203-4 90598	WP 0084, Figure 2, Index #3	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX13.00L (MAKE FROM BULK ITEM 17) ()	
60203-5 90598	WP 0084, Figure 2, Index #4	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX20.50L (MAKE FROM BULK ITEM 17) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60203-6 90598	WP 0084, Figure 2, Index #5	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.44WX24.12L (MAKE FROM BULK ITEM 17) ()	
60205-5 90598	WP 0084, Figure 3, Index #1	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 8.5 INCHES ()	
60205-6 90598	WP 0084, Figure 3, Index #2	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 2.88 INCHES ()	
60206-8 90598	WP 0084, Figure 4, Index #2	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 10.75 INCHES ()	
60206-9 90598	WP 0084, Figure 4, Index #1	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 7.88 INCHES ()	
60213-22 90598	WP 0084, Figure 2, Index #6	GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX39.00L ()	
60213-23 90598	WP 0084, Figure 2, Index #7	GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX24.50L ()	
60213-24 90598	WP 0084, Figure 5	GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX24.50L ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60216-32 90598	WP 0091, Figure 2, Index #1	WIRE, BRAID MAKE FROM P/N 8669, CAGEC 90816, CUT TO 16 INCHES (MAKE FROM BULK ITEM 24) ()	
60220-3 90598	WP 0084, Figure 2, Index #8	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.00WX4.84L (MAKE FROM BULK ITEM 16) ()	
60220-4 90598	WP 0084, Figure 2, Index #9	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.00WX8.42L (MAKE FROM BULK ITEM 16) ()	
60402-78 90598	WP 0091, Figure 3	WIRE, ELECTRICAL MAKE FROM P/N M5046/1YZ-9, CAGEC 81349, CUT TO 12 INCHES (MAKE FROM BULK ITEM 25) ()	
60411-7 90598	WP 0091, Figure 4, Index #1	CABLE, ELECTRICAL MAKE FROM P/N CO-03HOF(3/16) 0635, CAGEC 81349, CUT TO 310 INCHES (MAKE FROM BULK ITEM 3) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60411-17 90598	WP 0091, Figure 4, Index #2	CABLE, ELECTRICAL MAKE FROM P/N CO-03HOF(3/16)0635 CAGEC 81349, CUT TO 416 INCHES (MAKE FROM BULK ITEM 3) ()	
60411-9 90598	WP 0091, Figure 3	WIRE, ELECTRICAL MAKE FROM 6145-00-578-6072, CUT TO 165 INCHES (MAKE FROM BULK ITEM 29) ()	
60411-21 90598	WP 0091, Figure 2, Index #2	BRAID, WIRE MAKE FROM NSN 6145-00-548-2920, CUT TO 53 INCHES (MAKE FROM BULK ITEM 24) ()	
60411-23 90598	WP 0091, Figure 2, Index #3	BRAID, WIRE MAKE FROM NSN 6145-00-548-2920, CUT TO 10 INCHES (MAKE FROM BULK ITEM 24) ()	
60440-1 90598	WP 0091, Figure 3	WIRE, ELECTRICAL MAKE FROM P/N M16878/17BJE9, CAGEC 81349, CUT TO 62 INCHES (MAKE FROM BULK ITEM 29) ()	
60440-2 90598	WP 0091, Figure 3	WIRE, ELECTRICAL MAKE FROM P/N M16878/17BJE9, CAGEC 81349, CUT TO 60 INCHES (MAKE FROM BULK ITEM 29) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60440—3 90598	WP 0091, Figure 3	WIRE, ELECTRICAL MAKE FROM P/N M16878/17BJE9, CAGEC 81349, CUT TO 61 INCHES (MAKE FROM BULK ITEM 29) ()	
60440-4 90598	WP 0091, Figure 3	WIRE, ELECTRICAL MAKE FROM P/N M16878/17BJE9, CAGEC 81349, CUT TO 62 INCHES (MAKE FROM BULK ITEM 29) ()	
60440-5 90598	WP 0091, Figure 3	WIRE, ELECTRICAL MAKE FROM P/N M16878/17BJE9, CAGEC 81349, CUT TO 65 INCHES (MAKE FROM BULK ITEM 29) ()	
60440-7 90598	WP 0088, Figure 8	INSULATION, SLEEVING MAKE FROM P/N M230535–109–0, CAGEC 81349, CUT TO 10 INCHES (MAKE FROM BULK ITEM 10) ()	
60484-1 90598	WP 0090, Figure 1	TUBE, METALLIC MAKE FROM P/N ASTMB280, CAGEC 81346, CUT TO 0.250 OD X 11.00L (MAKE FROM BULK ITEM 20) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60485-1 90598	WP 0090, Figure 2	TUBE, METALLIC MAKE FROM P/N ASTMB280, CAGEC 81346, CUT TO 0.250 OD X 31.75L (MAKE FROM BULK ITEM 20) ()	
60486-100 90598	WP 0090, Figure 3	TUBE ASSEMBLY, METAL ()	
60487-1 90598	WP 0090, Figure 4	TUBE, METALLIC MAKE FROM P/N ASTMB280, CAGEC 81346, CUT TO 0.250 OD X 11.75L (MAKE FROM BULK ITEM 20) ()	
60488-100 90598	WP 0090, Figure 5	TUBE ASSEMBLY ()	
60489-100 90598	WP 0090, Figure 6	TUBE ASSEMBLY ()	
60492-100 90598	WP 0090, Figure 7	TUBE ASSEMBLY, METAL ()	
60499-1 90598	WP 0084, Figure 6	GASKET MAKE FROM P/N 8635K542, CAGEC 39428, CUT TO 4.250 OD (MAKE FROM BULK ITEM 14) ()	
60518-1 90598	WP 0084, Figure 7	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 10.16 OD X 7.63 ID ()	
60565-4 90598	WP 0083, Figure 1	ROPE, WIRE MAKE FROM NSN: 4010–00–575–6233 CUT TO 16.00L (MAKE FROM BULK ITEM 11) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60584-1 90598	WP 0084, Figure 8	GASKET MAKE FROM P/N 8635K542, CAGEC 39428, CUT TO FIT (MAKE FROM BULK ITEM 14) ()	
60588-1 90598	WP 0084, Figure 9	GASKET MAKE FROM P/N 8635K542, CAGEC 39428, CUT TO FIT (MAKE FROM BULK ITEM 14) ()	
60593-1 90598	WP 0087, Figure 1	HOSE, NONMETALLIC MAKE FROM P/N 5510K23, CAGEC 39428, CUT TO 30.00 INCHES (MAKE FROM BULK ITEM 10) ()	
60617-1 90598	WP 0086, Figure 1, Index #2	HINGE MAKE FROM P/N MS20257C3–4800, CAGEC 96906, CUT TO 21.50L (MAKE FROM BULK ITEM 7) ()	
60619-13 90598	WP 0091, Figure 2, Index #4	BRAID, WIRE MAKE FROM P/N 8663, CAGEC 16428, CUT TO 15 IN (MAKE FROM BULK ITEM 1) ()	
60625-1 90598	WP 0086, Figure 1, Index #3	HINGE MAKE FROM P/N MS20257C3–4800, CAGEC 96906, CUT TO 15.50L (MAKE FROM BULK ITEM 7) ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60628-3 90598	WP 0084, Figure 2, Index #8	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.00WX4.84L (MAKE FROM BULK ITEM 16) ()	
60628-4 90598	WP 0084, Figure 2, Index #9	GASKET MAKE FROM P/N R411N PSA, CAGEC 86730, CUT TO 1.00WX8.42L (MAKE FROM BULK ITEM 16) ()	
60638-22 90598	WP 0084, Figure 2, Index #6	GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX39.00L (MAKE FROM BULK ITEM 17) ()	
60638-23 90598	WP 0084, Figure 2, Index #7	GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX24.50L (MAKE FROM BULK ITEM 17) ()	
60638-24 90598	WP 0084, Figure 5	GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX24.50L (MAKE FROM BULK ITEM 17) ()	
60810-14 90598	WP 0084, Figure 10, Index #1	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 10.93L ()	
60810-15 90598	WP 0084, Figure 10, Index #2	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 14.78L ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
60815-5 90598	WP 0084, Figure 10, Index #3	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 8.00L ()	
60815-6 90598	WP 0084, Figure 10, Index #4	GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 14.16L ()	
60816-1 90598	WP 0086, Figure 2	HINGE MAKE FROM P/N MS20257HC2–300, CAGEC 96906, CUT TO 14.00L ()	
60824-1 5RQL2	WP 0084, Figure 11	GASKET MAKE FROM P/N R411N PSA, CAGEC 2P653, CUT TO 2.88 OD X 2.00 ID (MAKE FROM BULK ITEM 18) ()	
MS21266-2N 96906	WP 0085, Figure 1	GROMMET, NONMETALLIC ()	
N/A N/A	WP 0083, Figure 2	WHEEL ASSEMBLY QUICK PIN RELEASE CABLE ()	
N/A N/A	WP 0084, Figure 12	GASKET, TRANSFORMER ()	
N/A N/A	WP 0084, Figure 13	GASKET, TRANSFORMER ()	
N/A N/A	WP 0088, Figure 10	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 11	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 12	INSULATION, FRAME ASSEMBLY ()	

ILLUSTRATED LIST OF MANUFACTURED ITEMS INTRODUCTION - (CONTINUED)

PART NUMBER/ CAGEC	DRAWING NUMBER	NAME	FIGURE
N/A N/A	WP 0088, Figure 13	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 14	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 15	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 16	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 17	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 18	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 19	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 20	INSULATION, FRAME ASSEMBLY ()	
N/A N/A	WP 0088, Figure 21	INSULATION, FRAME ASSEMBLY ()	

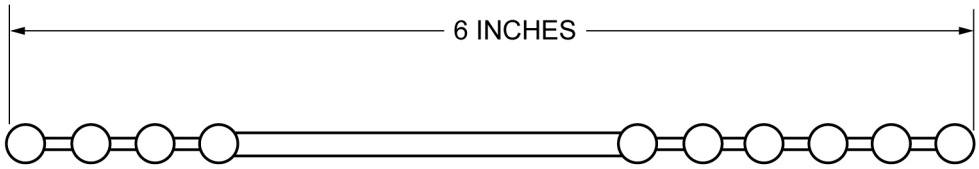
END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — CHAIN, DAMPER

INITIAL SETUP:

CHAIN, DAMPER



G06452016850

Figure 1. Chain, Damper (P/N CHN2).

Notes

To locate the item in the RPSTL, see WP 0106, Figure 36, Item 8.

For Damper Assembly Repair Procedure, see WP 0077.

For Damper Assembly Replacement Procedure, see WP 0048.

Make from Bead Chain, Weldless, Type II, CL5, Size 10, FEDERAL Specification RR-C-271.

Procedure

Cut chain to 6-inch length as shown in Figure 1.

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — CABLES

INITIAL SETUP:

CABLE, DUCT COVER

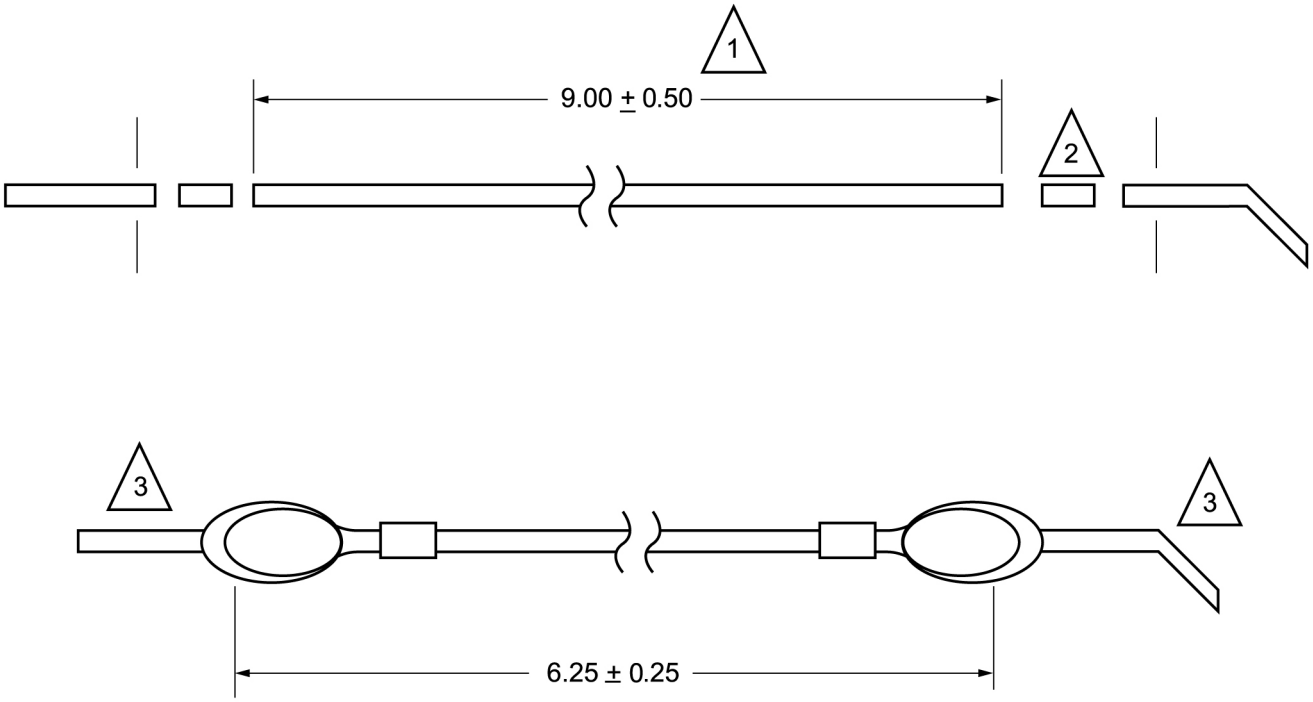


Figure 1. Cable, Duct Cover (P/N 60565-4).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 9, Item 10.

For Duct Cover Repair Procedure, see WP 0055.

For Duct Cover Replacement Procedure, see WP 0022.

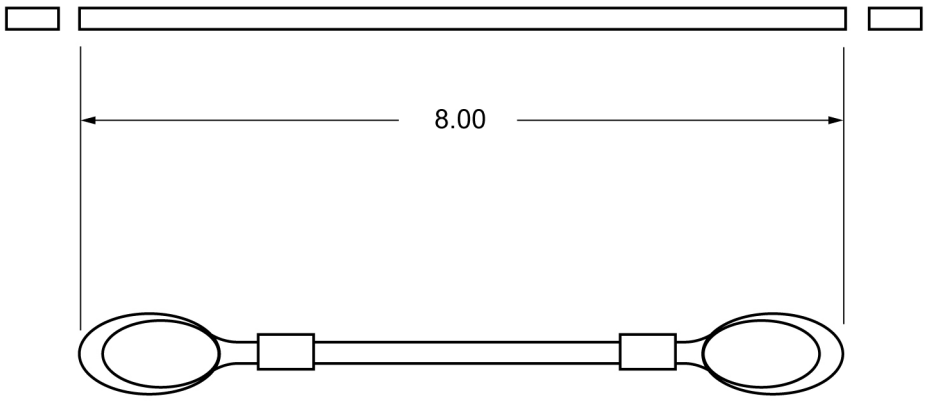
Make from Cable P/N 8930533 (39428).

Use Sleeve, Splicing P/N MS51844-62.

Reuse tab and connector.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — CABLES - (CONTINUED)

CABLE, WHEEL ASSEMBLY



G06452016820

Figure 2. Cable, Wheel Assembly.

Notes

To locate the item in the RPSTL, see WP 0105, Figure 35, Item 2.

For Wheel Assembly Repair Procedures, see WP 0076.

For Wheel Assembly Replacement Procedures, see WP 0035.

Make from cable P/N 8930T33 (39428).

Use sleeve splicing P/N 3623T13 (39428).

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS

INITIAL SETUP:

GASKET, REAR PANEL ASSEMBLY

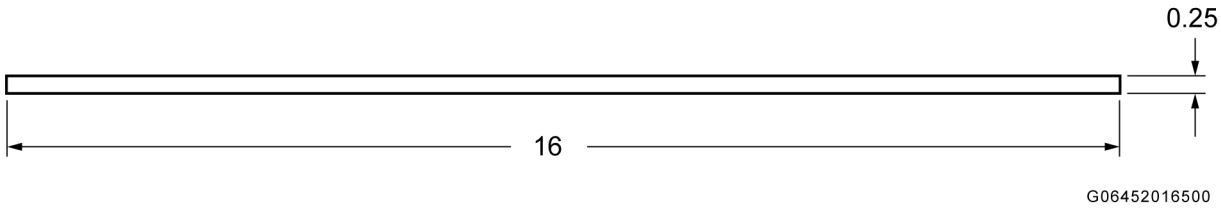


Figure 1. Gasket, Rear Panel Assembly (P/N 60000-158).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 5, Item 4.

For Rear Panel Replacement Procedure, see WP 0020.

For Rear Panel Repair Procedure, see WP 0053.

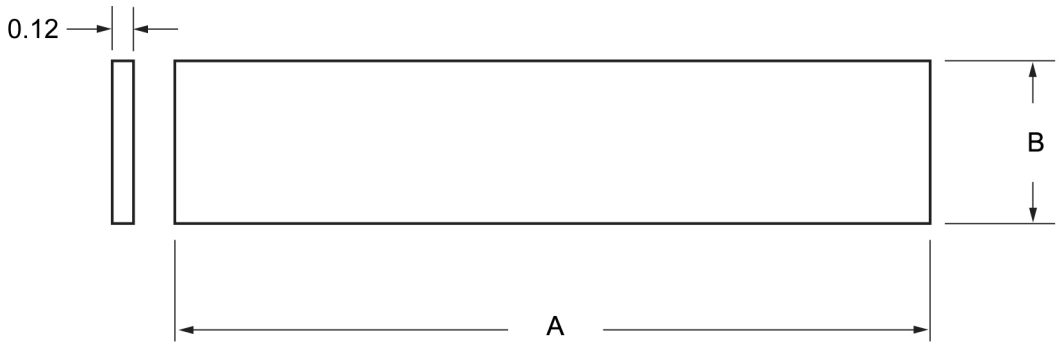
Made from GORE joint sealant, adhesive back, 1/4 inch by 50 feet roll. P/N 0050D, CAGEC 17217.

Procedure

Cut to 16-inch length as shown in Figure 2.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKETS, TOP AND REAR PANELS



INDEX	A (INCHES)	B (INCHES)	QUANTITY
1	39.50	1.44	2
2	47.42	1.44	2
3	13.00	1.44	2
4	20.50	1.44	2
5	24.12	1.44	2
6	39.00	1.50	2
7	24.50	1.50	1
8	4.84	1.00	2
9	8.42	1.00	2

G06452016510

Figure 2. Gaskets, Top and Rear Panels.

Notes

Refer to RPSTL, WP 0095, Figures 4 and 5.

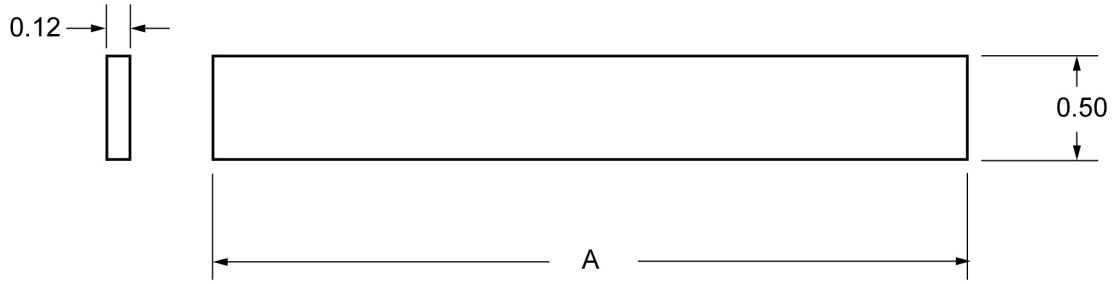
Made from Rubber, Neoprene, Sponge, Adhesive back, Shore 00, Durometer 25-45. P/N 411N PSA.

Procedure

1. Cut each gasket to length and width as shown in Figure 2.
2. Place on location and mark hole location, remove and punch holes.
3. Peel plastic strip off back of gasket and install on unit.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, DAMPER (1 of 2)



INDEX	A (INCHES)	QUANTITY
1	8.50	2
2	2.88	2

G06452016840

Figure 3. Gasket, Damper (P/N 60105-5 and P/N 60205-5)

Notes

To locate the item in the RPSTL, see WP 0106, Figure 36 , Items 22 and 23.

For Damper Assembly Repair Procedure, see WP 0077.

For Damper Assembly Replacement Procedure, see WP 0048.

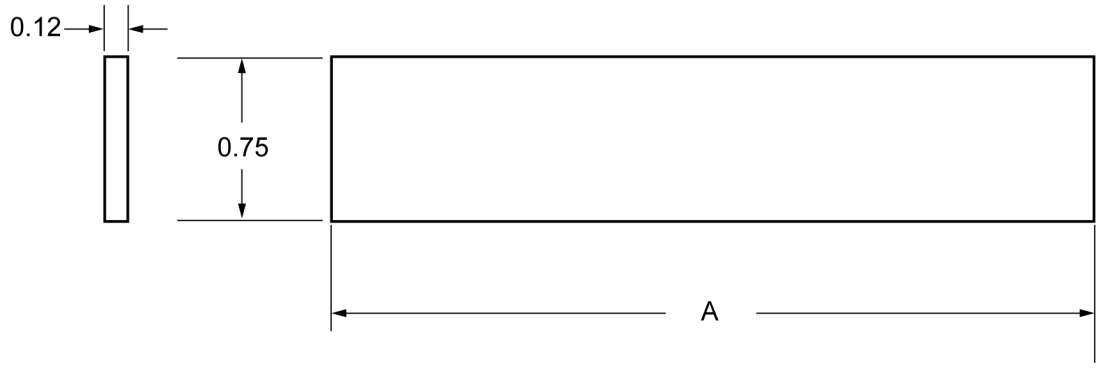
Make from Rubber, CELLULAR, Chemically Blown per MIL-R-6130, Type II, Grade A, Condition Soft, 0.50 wide x 0.19 thick, adhesive backed.

Procedure

1. Cut each gasket to length as shown in Figure 3.
2. Peel plastic strip off back of gasket and install on unit.
3. Seal mating edges of gasket with sealant.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, DAMPER (2 of 2)



INDEX	A (INCHES)	QUANTITY
1	7.88	2
2	10.75	2

G06452016830

Figure 4. Gasket, Damper (P/N 60206-8 and 60206-9)

Notes

To locate the item in the RPSTL, see WP 0106, Figure 36, Items 19 and 20.

For Damper Assembly Repair Procedures, see WP 0077.

For Damper Assembly Replacement Procedures, see WP 0048.

Make from Rubber, Cellular, Chemically Blown per MIL-R-6130, Type II, Grade A, Condition Soft, 0.75 wide x 0.12 thick, adhesive backed.

Procedure

1. Cut each gasket to length as shown in Figure 4.
2. Place on location and mark hole locations, remove and punch holes.
3. Peel plastic strip off back of gasket and install on unit.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, REAR PANEL

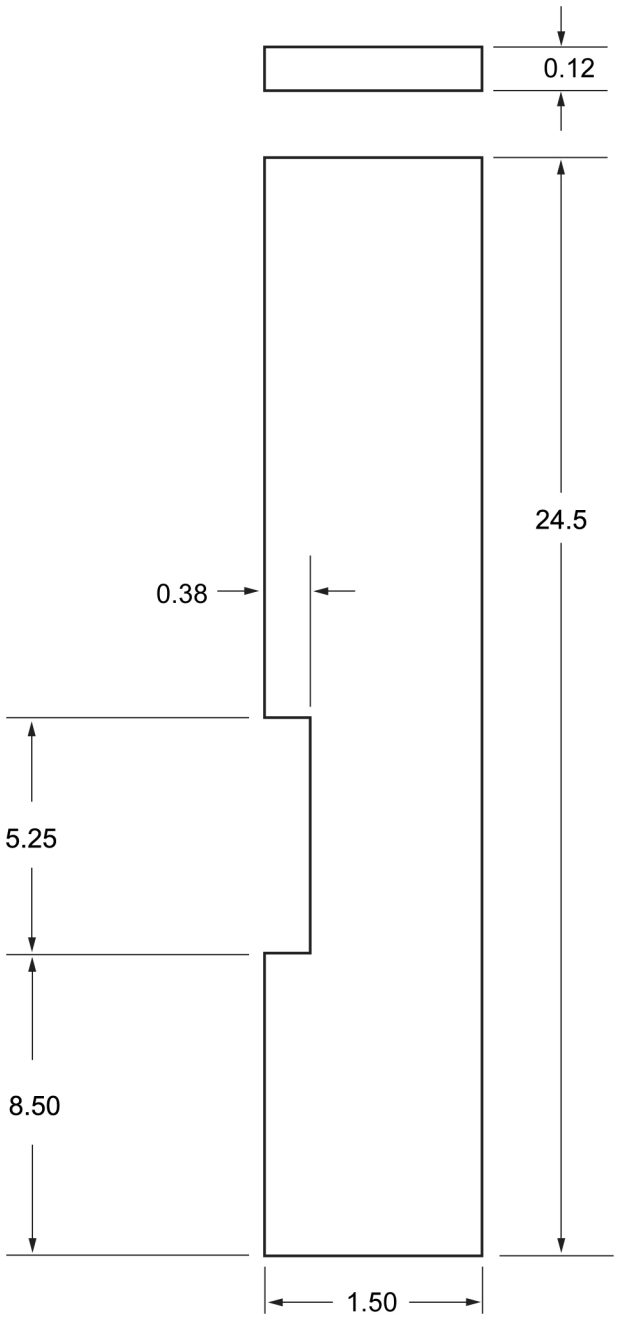


Figure 5. Gasket, Rear Panel (P/N 60638-24).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 5, Item 43.

For Rear Panel Replacement Procedure, see WP 0020.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

For Rear Panel Repair Procedure, see WP 0053.

Make from Rubber, Neoprene, Sponge, Adhesive back, Shore 00, Durometer 25-45. P/N 411N PSA.

Procedure

1. Cut gasket to size as shown in Figure 5.
2. Place along rear panel and mark hole location, remove and punch holes.
3. Peel plastic strip off back of gasket and install on rear panel.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, FUEL DRAIN COVER

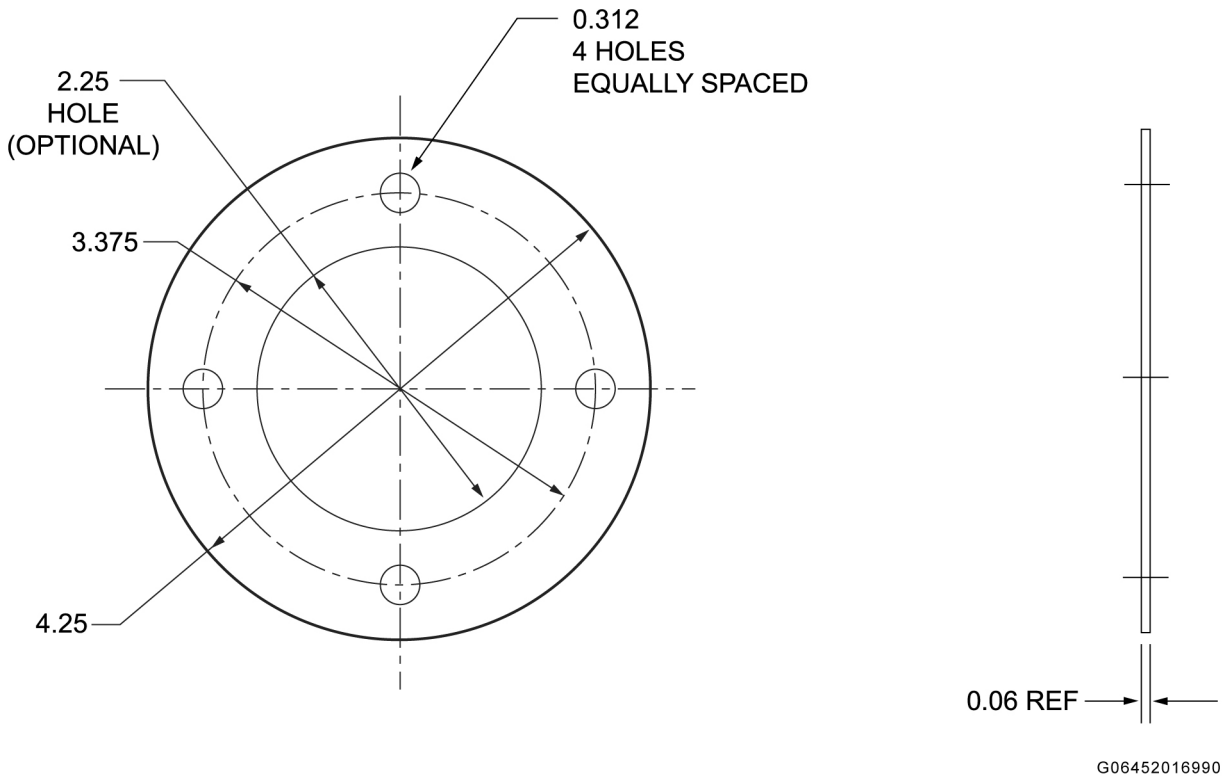


Figure 6. Gasket, Fuel Drain Cover (P/N 60499-1).

Notes

To locate the item in the RPSTL, see WP 0097, Figure 19, Item 6.

For Fuel Tank Assembly Repair Procedures, see WP 0062.

For Fuel Tank Assembly Replacement Procedures, see WP 0031.

Make from BUNA-N-Rubber sheeting, 1/16 thick per ASTM D-2000-86E, Type BG, Color Black, Hardness 45-55. P/N 8635K542.

Procedure

Cut gasket to size as shown in Figure 6.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, HEAT EXCHANGE ASSEMBLY

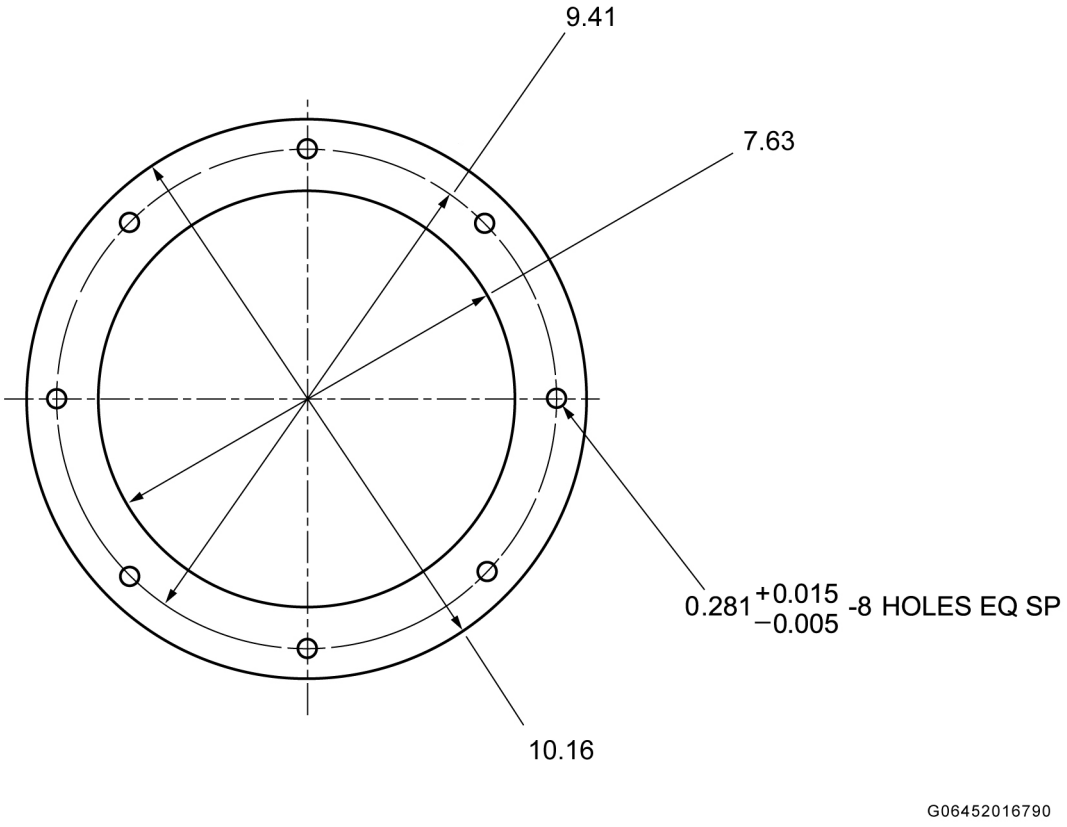


Figure 7. Gasket, Heat Exchange Assembly (P/N 60518-1).

Notes

To locate the item in the RPSTL, see WP 0100, Figure 26, Item 5.

For Heat Exchanger Repair Procedures, see WP 0036, WP 0041 and WP 0042.

For Heat Exchanger Replacement Procedures, see WP 0071 and WP 0073.

Make from Rubber Sheet, Cellular, Type 2, Grade A, Condition Soft, P/N MIL-R-6130.

Procedure

1. Cut gasket to size as shown in Figure 7.
2. Place along rear panel and mark hole location, remove and punch holes.
3. Peel plastic strip off back of gasket and install.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, COMBUSTION FAN MOUNT

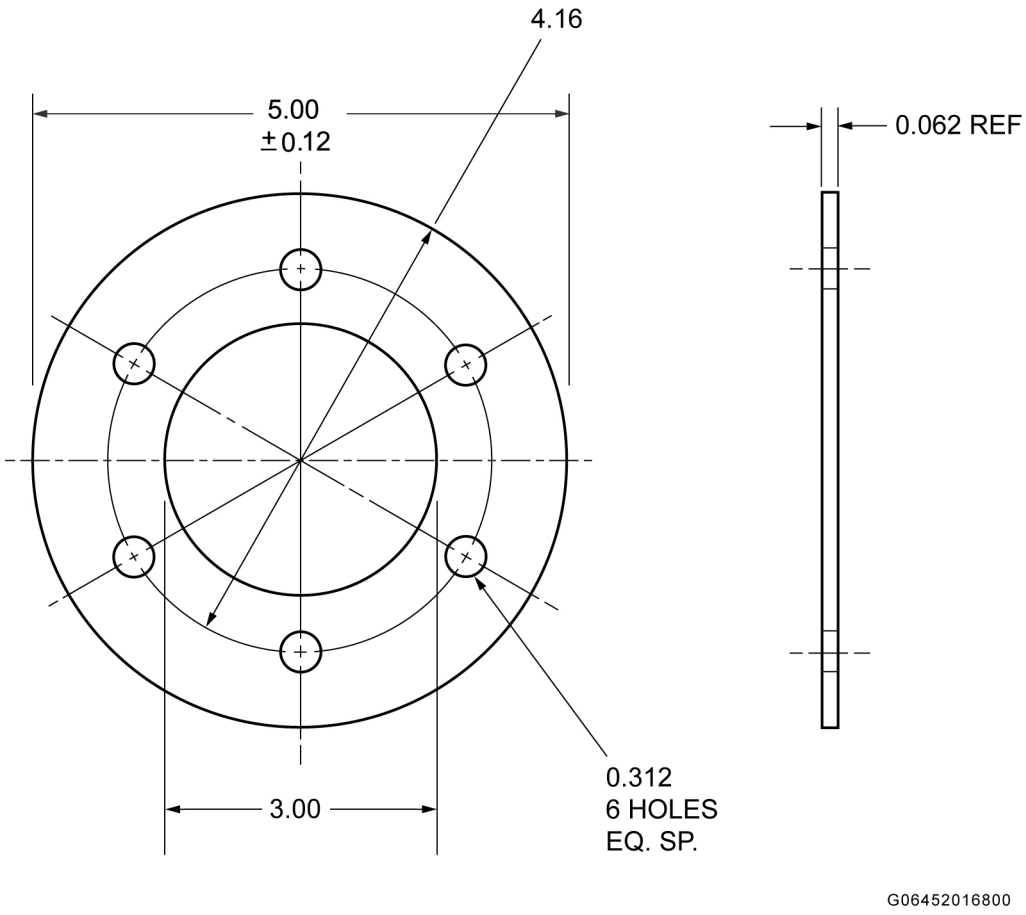


Figure 8. Gasket, Combustion Fan Mount (P/N 60584-1 and P/N 60584-1).

Notes

To locate the item in the RPSTL, see WP 0099, Figure 24, Items 7 and 15.

For Combustion Fan Repair Procedures, see WP 0065.

For Combustion Fan Replacement Procedures, see WP 0035.

Make from BUNA-N-Rubber sheeting, 1/16 thick per ASTM D-2000-86E, Type BG, Color Black, Hardness 45-55. P/N 8635K542.

Procedure

Cut gasket to size as shown in Figure 8.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, COMBUSTION FAN AIR OUTLET

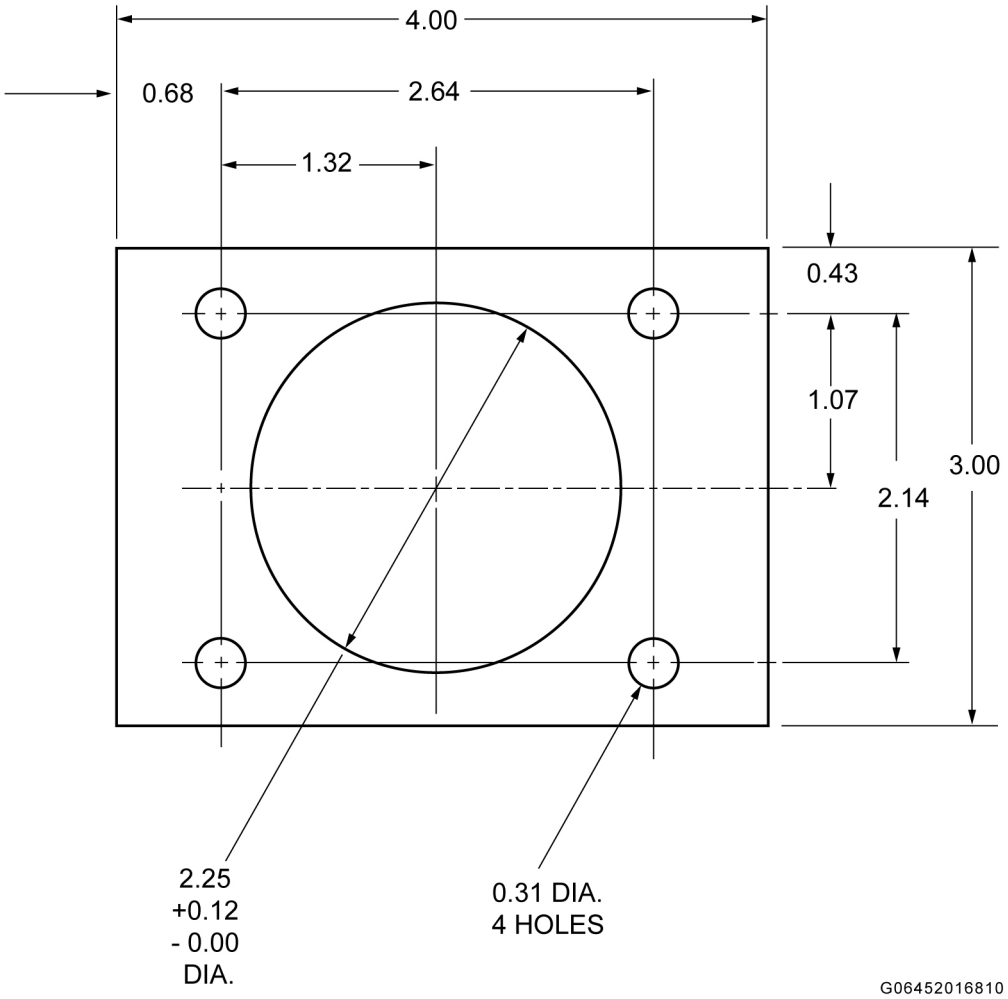


Figure 9. Gasket, Combustion Fan Air Outlet (P/N 60588-1).

Notes

To locate the item in the RPSTL, see WP 0099, Figure 24, Item 18.

For Combustion Air Fan Repair Procedures, see WP 0065.

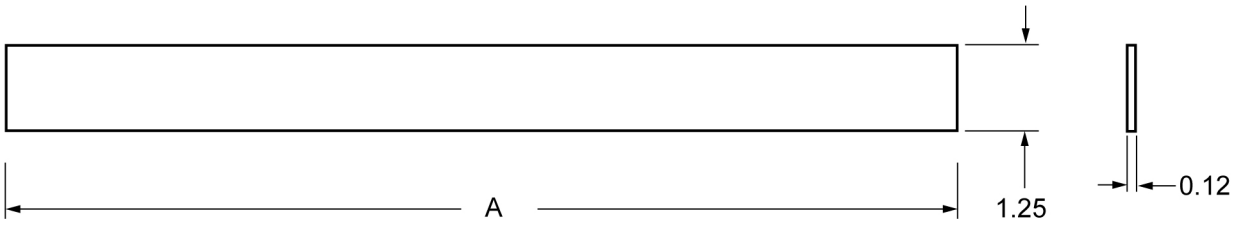
Make from BUNA-N-Rubber sheeting, 1/16 thick per ASTM D-2000-86E, Type BG, Color Black, Hardness 45-55. P/N 8635K542.

Procedure

Cut gasket to size as shown in Figure 9.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, CONTROL BOX ASSEMBLY



INDEX	A (INCHES)	QTY
1	10.93	2
2	14.78	2
3	8.00	2
4	14.16	2

Figure 10. Gasket, Control Box Assembly.

Notes

To locate the item in the RPSTL, see WP 0096, Figure 13, Items 16 through 19.

For Control Box Assembly Replacement Procedures, see WP 0025.

For Control Box Assembly Repair Procedures, see WP 0057.

Made from P/N MIL-R-6130, CAGEC 81349.

Procedure

Cut to 30-inch length as shown in Figure 10.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, TIMEMETER

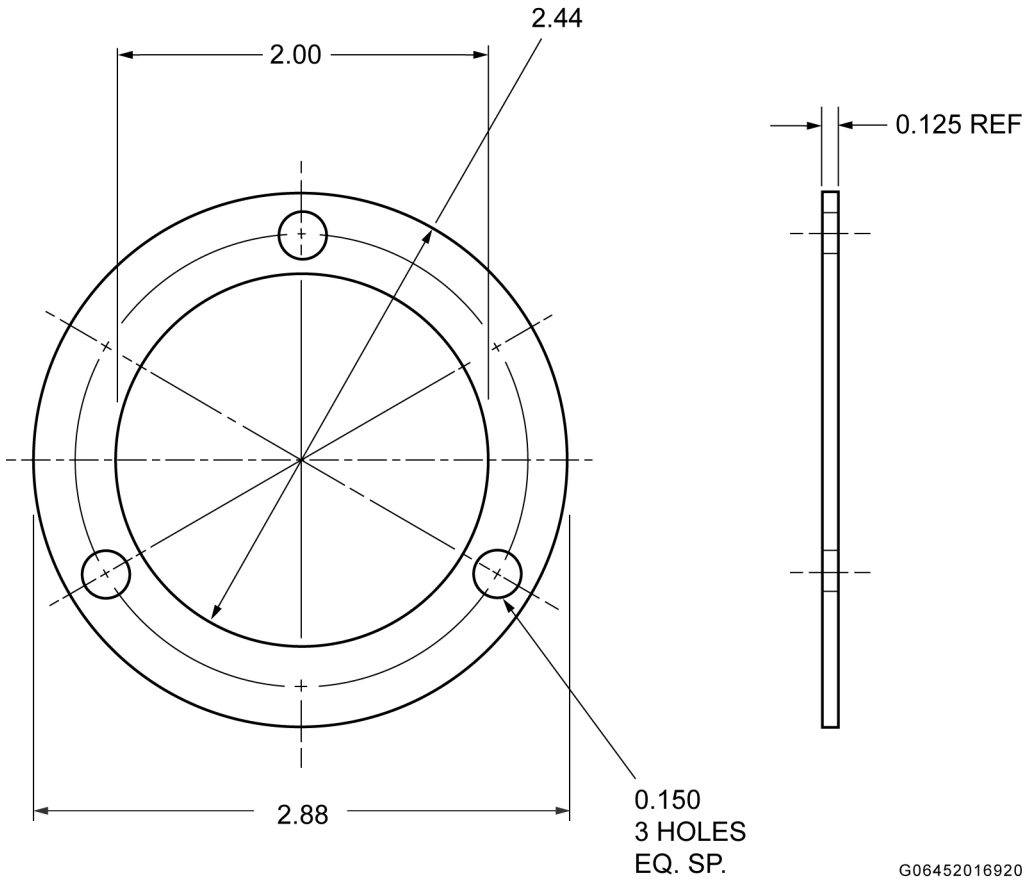


Figure 11. Gasket, Timemeter.

Notes

To locate the item in the RPSTL, see WP 0096, Figure 11, Item 2.

For Control Box Panel Assembly Replacement Procedures, see WP 0024.

For Control Box Panel Assembly Repair Procedures, see WP 0056.

Made from P/N R411NPSA,CAGEC 2P653, Rubber, MIL-STD-670.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, TRANSFORMER (1 of 2)

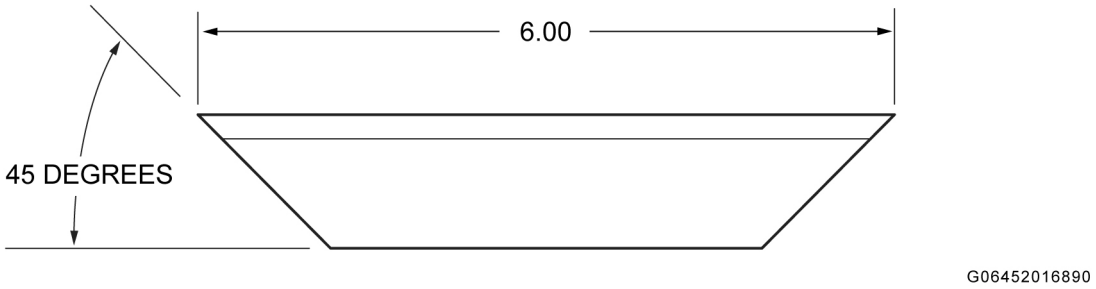


Figure 12. Gasket, Transformer (1 of 2).

Notes

To locate the item in the RPSTL, see WP 0100, Figure 27 Item 13.

For Transformer Assembly Repair Procedures, see and WP 0070 and WP 0071.

For Transformer Assembly Replacement Procedures, see WP 0040 and WP 0041.

Made from Rubber and wire mesh, Adhesive back, P/N 01-064-1756 (57003).

Procedure

1. Cut each gasket to length; cut two 45 degree angles as shown in Figure 12.

2. Peel plastic strip off back of gasket and install so wire mesh is to the outside perimeter on unit. (Make a loop on each end and install sleeves.)

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GASKETS - (CONTINUED)

GASKET, TRANSFORMER (2 of 2)

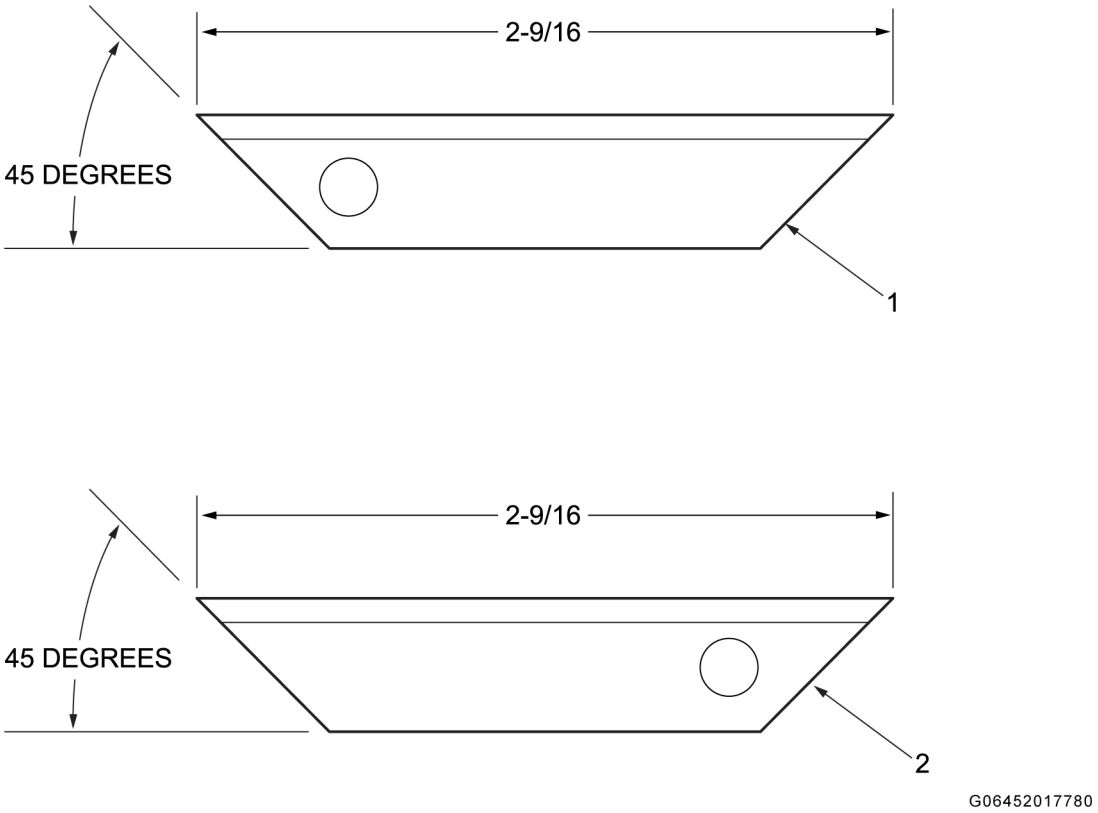


Figure 13. Gasket, Transformer (2 of 2).

Notes

To locate the item in the RPSTL, see WP 0100, Figure 28, Item 13.

For Transformer Assembly Repair Procedures, see and WP 0070 and WP 0071.

For Transformer Assembly Replacement Procedures, see WP 0040 and WP 0041.

Made from rubber and wire mesh, Adhesive back, P/N 01-064-1756 (57003).

Procedure

1. Cut each gasket to length; cut two 45 degree angles as shown in Figure 13.
2. Place on location so wire mesh is to the outside perimeter and mark hole location, remove and punch holes.
3. Peel plastic strip off back of gasket and install so wire mesh is to the outside perimeter on unit.

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — GROMMET, EXHAUST PIPE STOWAGE

INITIAL SETUP:

GROMMET, EXHAUST PIPE STOWAGE

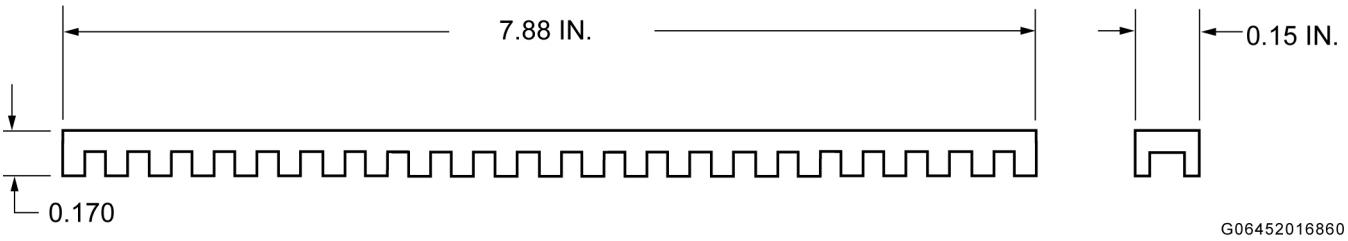


Figure 1. Grommet, Exhaust Pipe Stowage.

Notes

To locate the item in the RPSTL, see WP 0107, Figure 39, Item 7.

For Frame Assembly Repair Procedure, see WP 0078.

For Frame Assembly Replacement Procedures, see WP 0049.

Made from P/N MS21266-2N, CAGEC 96906.

Procedure

Cut to length as shown in Figure 1.

Apply Sealant (WP 0116, Item 12) to edge of hole on unit.

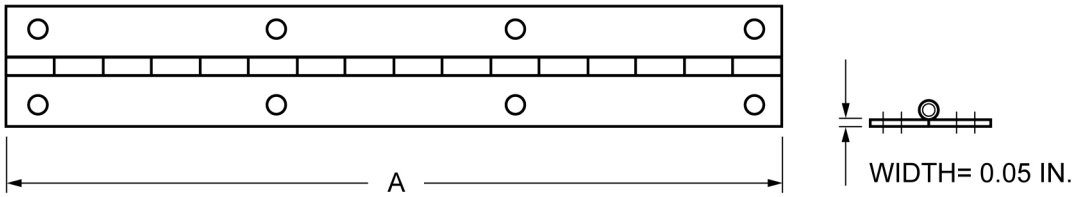
END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — HINGES

INITIAL SETUP:

HINGES, CONTROL BOX COVER, FRONT SIDE DOOR, REAR SIDE DOOR



INDEX	A (INCHES)
1	20.5
2	21.5
3	15.5

G06452016530

Figure 1. Hinges: Control Box Cover, Front Side Door, Rear Side Door (P/N 60033-1, 60617-1, and 60625-1).

Notes

Control Box Cover hinge located in the RPSTL, WP 0095, Figure 3, Item 7.

Front Side Door hinge located in the RPSTL, WP 0095, Figure 6, Item 4.

Rear Side Door hinge located in the RPSTL, WP 0095, Figure 7, Item 4.

All three hinges made from P/N MS20257C3-4800, CAGEC 96906.

Procedure

1. Cut Control Box Cover hinge to 20.5-inch length as shown in Figure 1.
2. Cut Front Side Door hinge to 21.5-inch length as shown in Figure 1.
3. Cut Control Box Cover hinge to 15.5-inch length as shown in Figure 1.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — HINGES - (CONTINUED)

HINGE, CONTROL BOX ASSEMBLY

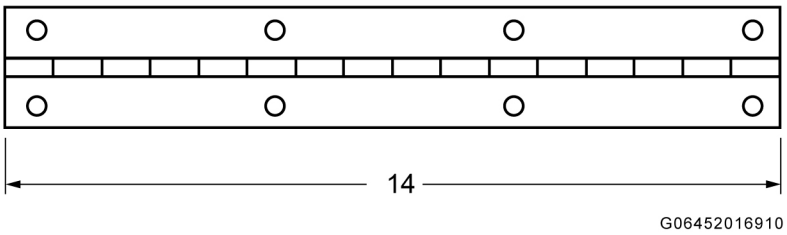


Figure 2. Hinge, Control Box Assembly.

Notes

To locate the item in the RPSTL, see WP 0096, Figure 13, Item 15.

For Control Box Assembly Replacement Procedures, see WP 0025.

For Control Box Assembly Repair Procedures, see WP 0057.

Made from P/N MS20257HC2–300, CAGEC 96906.

Refer to Standardization Manual 4120 3-M for further information.

Procedure

Cut to length as shown in Figure 2.

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — HOSE, COMBUSTION AIR FAN

INITIAL SETUP:

HOSE, COMBUSTION AIR FAN

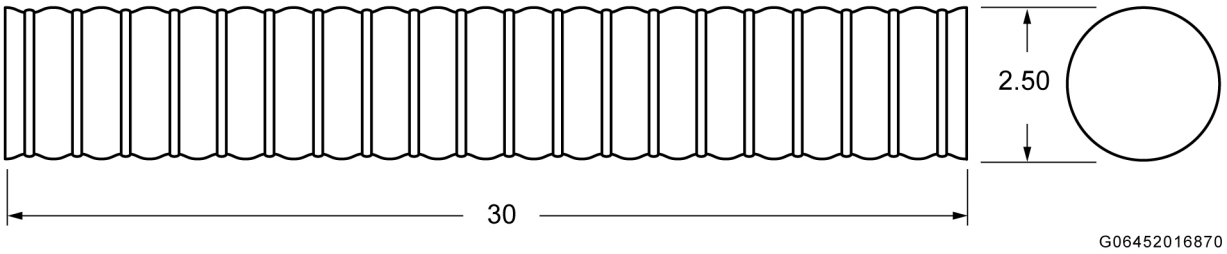


Figure 1. Hose, Combustion Air Fan.

Notes

To locate the item in the RPSTL, see WP 0099, Figure 24, Item 2.

For Combustion Air Fan Repair Procedures, see WP 0065.

Made from P/N 5510K23, CAGEC 39428.

Procedure

Cut to 30-inch length as shown in Figure 1.

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS

INITIAL SETUP:

INSULATION, REAR PANEL

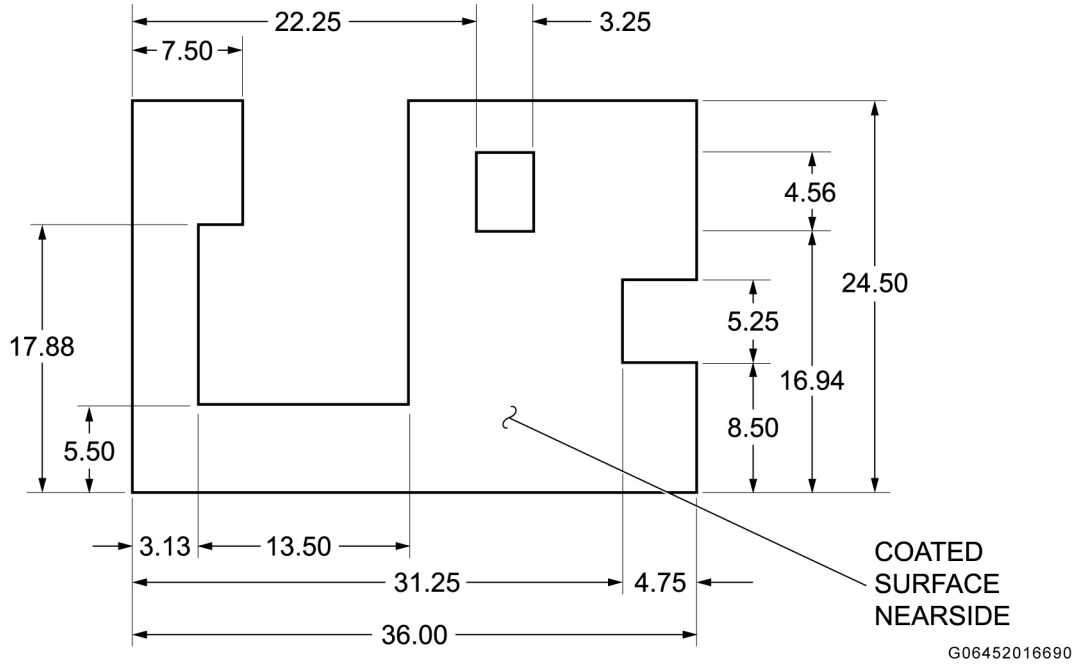


Figure 1. Insulation, Rear Panel (P/N 60169-1).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 5, Item 46.

For Rear Panel Repair Procedure, see WP 0053.

For Rear Panel Replacement Procedure, see WP 0020.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 1.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRONT SIDE DOOR

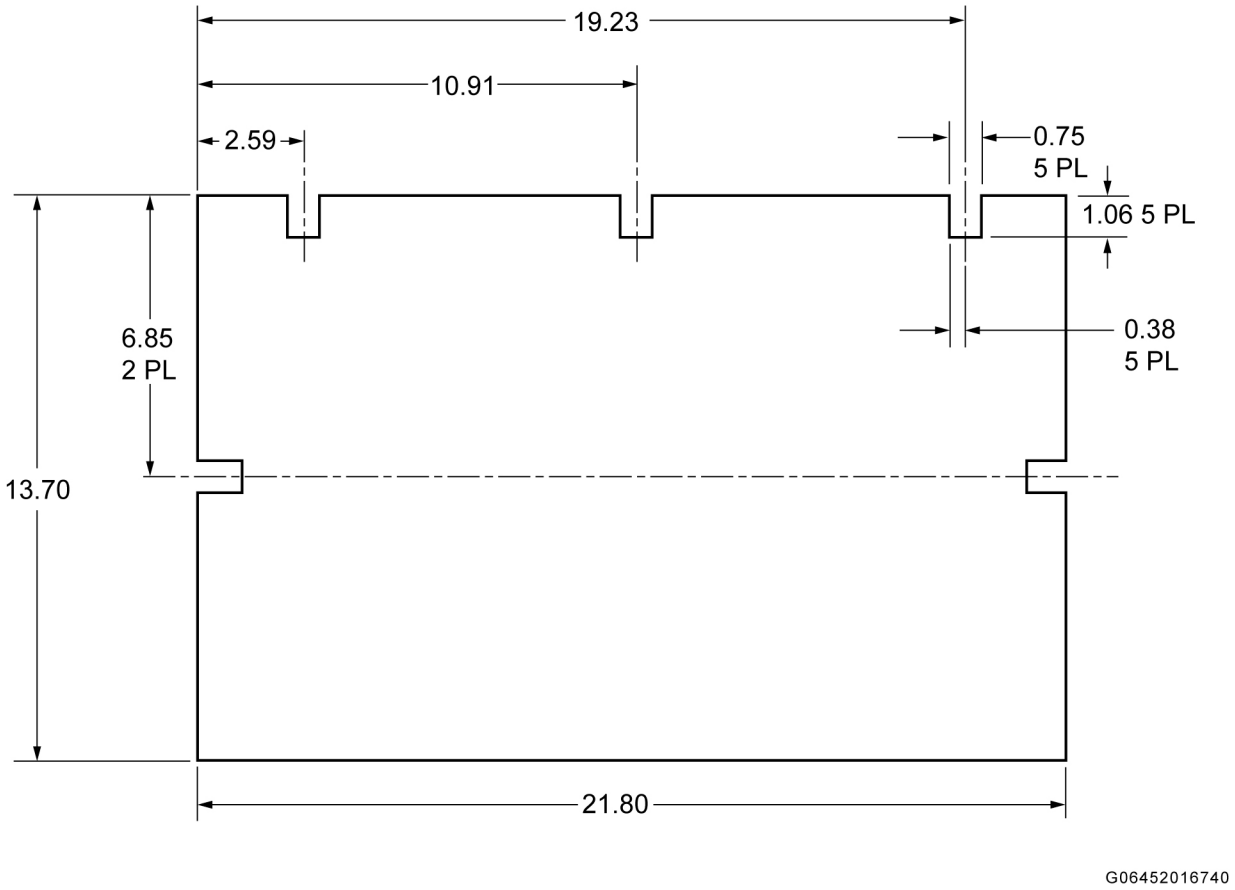


Figure 2. Insulation, Front Side Door (P/N 60174-1)

Notes

To locate the item in the RPSTL, see WP 0095, Figure 6, Item 12.

For Front and Rear Side Door Repair Procedure, see WP 0054.

For Front and Rear Side Door Replacement Procedure, see WP 0021.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 2.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, REAR SIDE DOOR

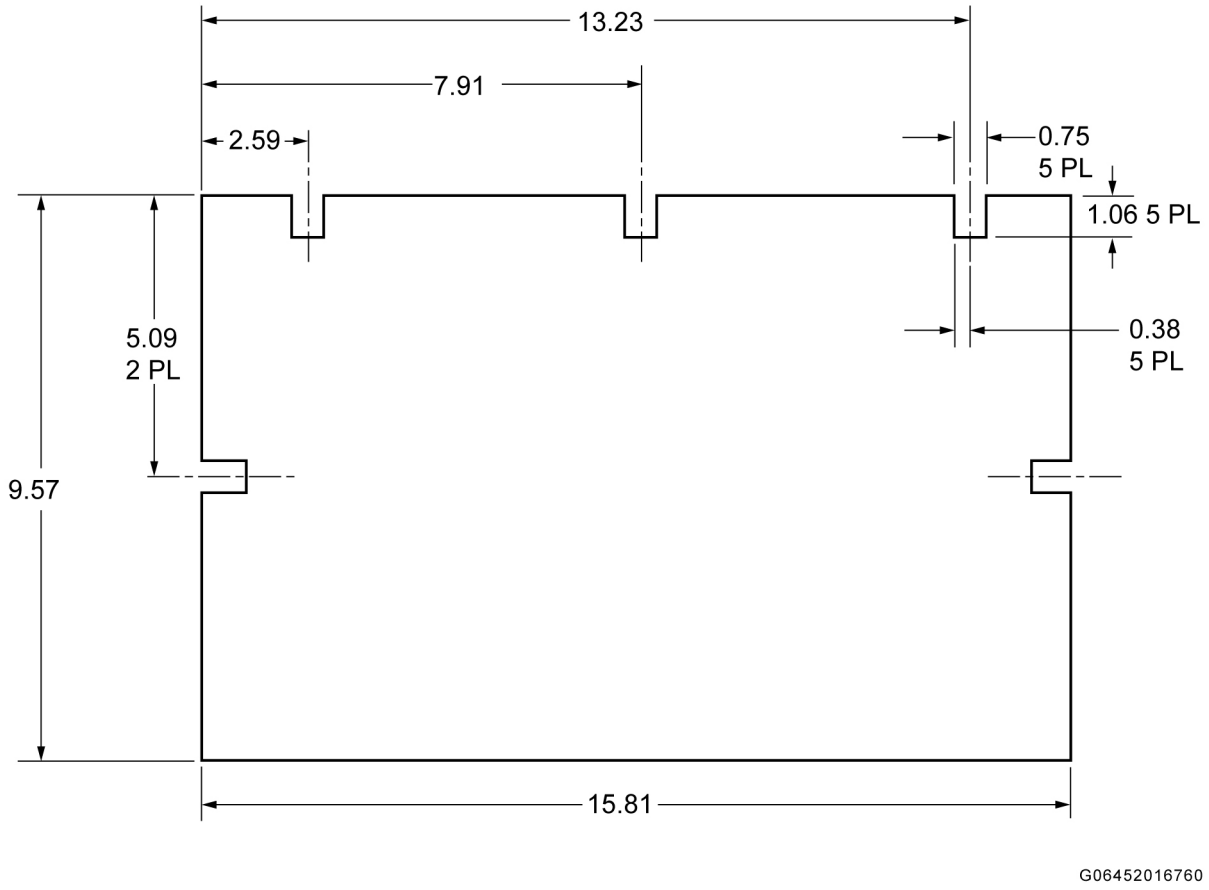


Figure 3. Insulation, Rear Side Door (P/N 60175-1).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 7, Item 12.

For Front and Rear Side Door Repair Procedure, see WP 0054.

For Front and Rear Side Door Replacement Procedure, see WP 0021.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05-inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 3.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, REAR PANEL

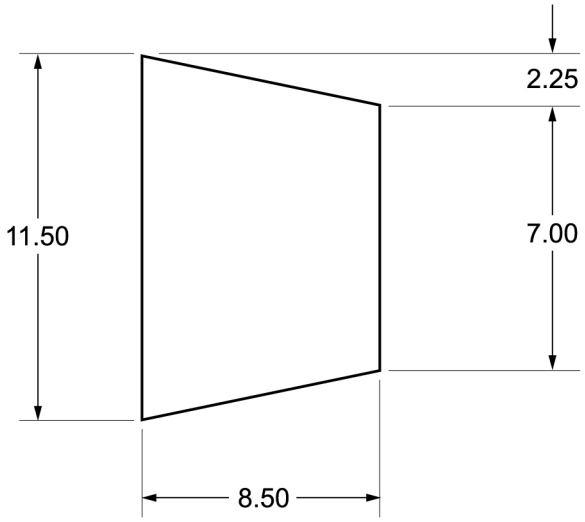


Figure 4. Insulation, Rear Panel (P/N 60179-1).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 5, Item 44.

For Rear Panel Replacement Procedure, see WP 0020.

For Rear Panel Repair Procedure, see WP 0053.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

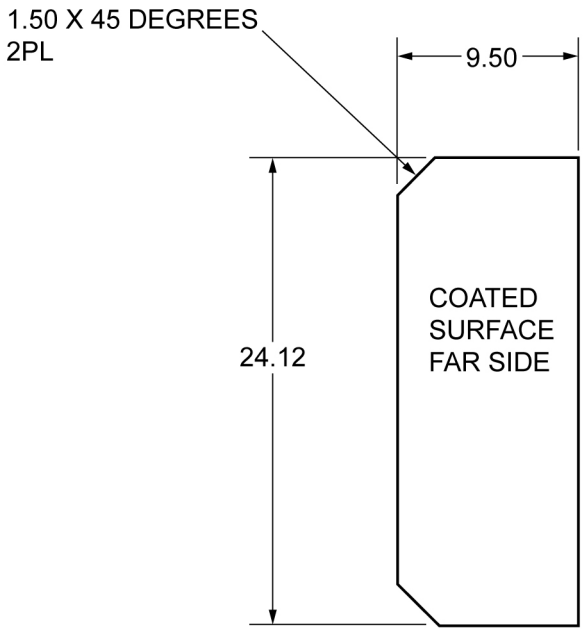
Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 4.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, TOP PANEL (1 of 3)



G06452016710

Figure 5. Insulation, Top Panel (P/N 60188-1).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 4, Item 5.

For Top Panel Repair Procedure, see WP 0052.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 5.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, TOP PANEL (2 of 3)

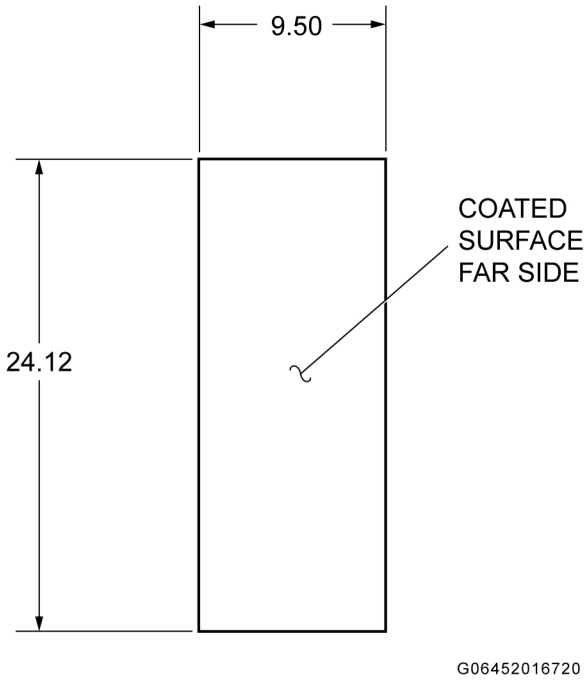


Figure 6. Insulation, Top Panel (P/N 60188-2).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 4, Item 6.

For Top Panel Repair Procedure, see WP 0052.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 6.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, TOP PANEL (3 of 3)

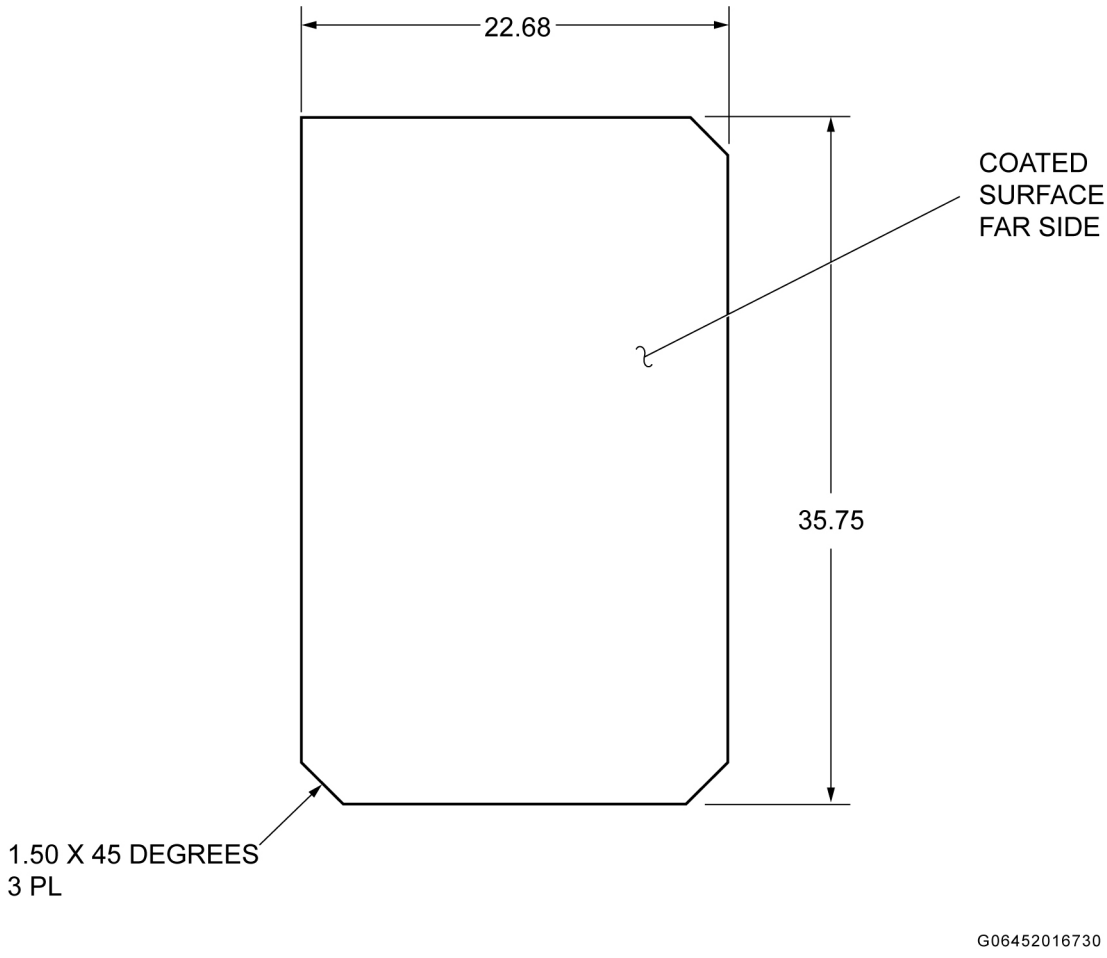


Figure 7. Insulation, Top Panel (P/N 60188-3).

Notes

To locate the item in the RPSTL, see WP 0095, Figure 4, Item 7.

For Top Panel Repair Procedure, see WP 0052.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

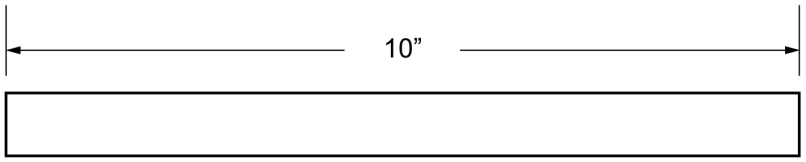
Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 7.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION SLEEVE, THERMOSTAT ASSEMBLY



G06452016880

Figure 8. Insulation Sleeve, Thermostat Assembly (P/N 60440-7).

Notes

To locate the item in the RPSTL, see WP 0100, Figure 26, Item 16.

For Thermostat Assembly Repair Procedure, see WP 0069.

For Thermostat Assembly Replacement Procedure, see WP 0039.

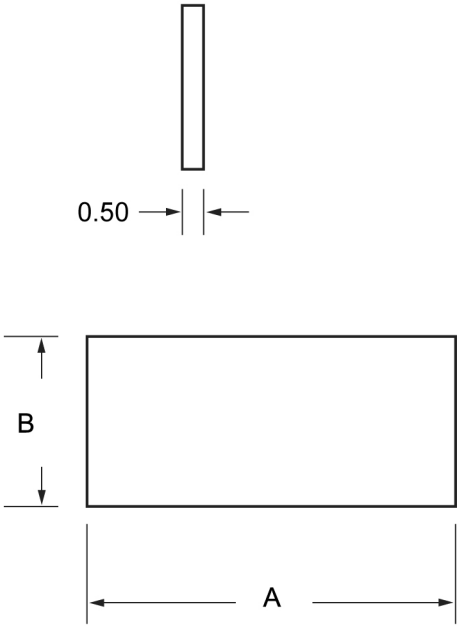
Make from M230535-109-0, CAGEC 81349, Insulation Sleeving.

Procedure

Cut to 10-inch length as shown in Figure 8.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (1 of 13)



INDEX	PART NO.	A	B
18	60140-1	8.68	5.38
19	60140-2	21.38	5.38
20	60140-3	10.38	5.38
21	60140-4	10.88	5.38
22	60140-5	28.25	12.12
23	60140-6	20.25	7.38
24	60140-7	28.25	10.88
25	60140-8	7.38	7.38
26	60140-9	13.50	5.38
27	60140-10	7.50	5.38
28	60140-11	9.00	8.12
29	60140-12	11.62	7.88
30	60140-13	7.88	5.38
31	60140-14	10.25	2.12
32	60140-15	13.00	4.00
33	60140-16	23.12	4.00
34	60140-17	24.75	1.75
35	60140-18	15.38	1.75
36	60140-19	13.00	8.12
37	60140-20	21.38	4.00
38	60140-21	13.50	8.75

G06452016560

Figure 9. Insulation, Frame (1 of 13).

Notes

Refer to WP 0078, Figure 4 for Index Number References.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 9.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (2 of 13)

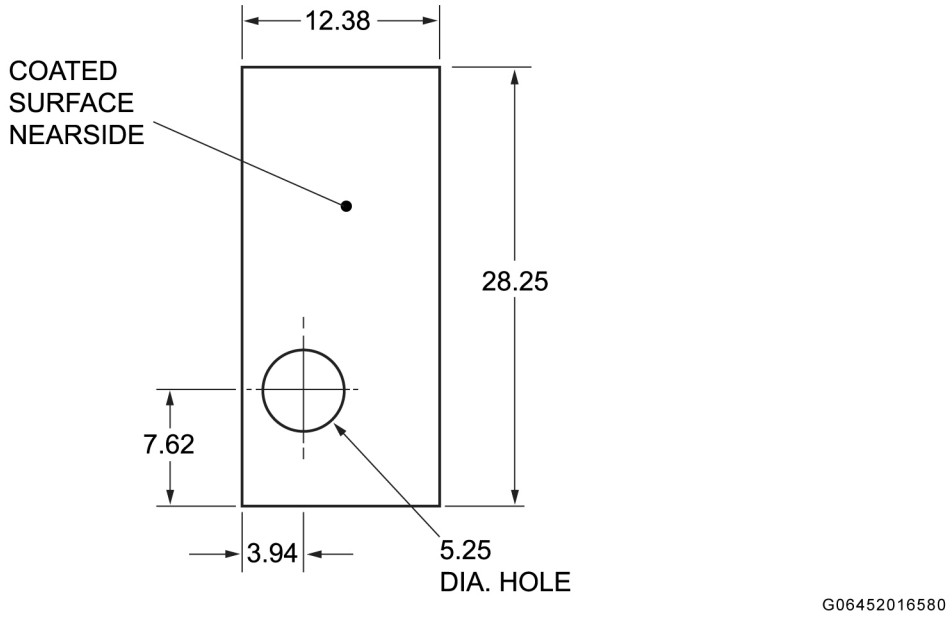


Figure 10. Insulation, Frame (2 of 13).

Notes

Refer to WP 0078, Figure 4, Item 39 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 10.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (3 of 13)

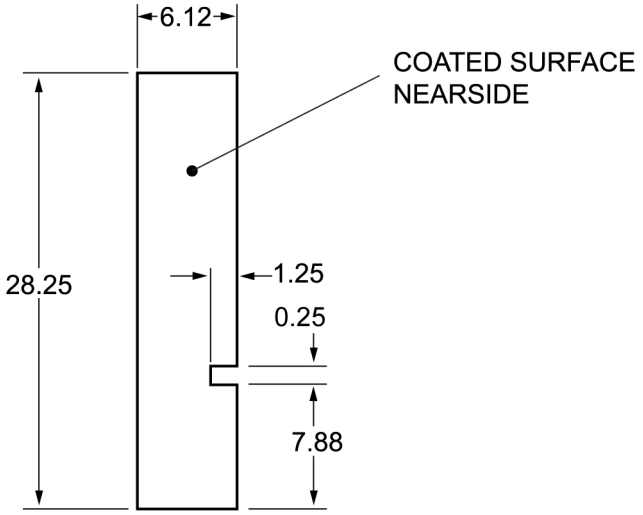


Figure 11. Insulation, Frame (3 of 13).

Notes

Refer to WP 0078, Figure 4, Item 40 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 11.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (4 of 13)

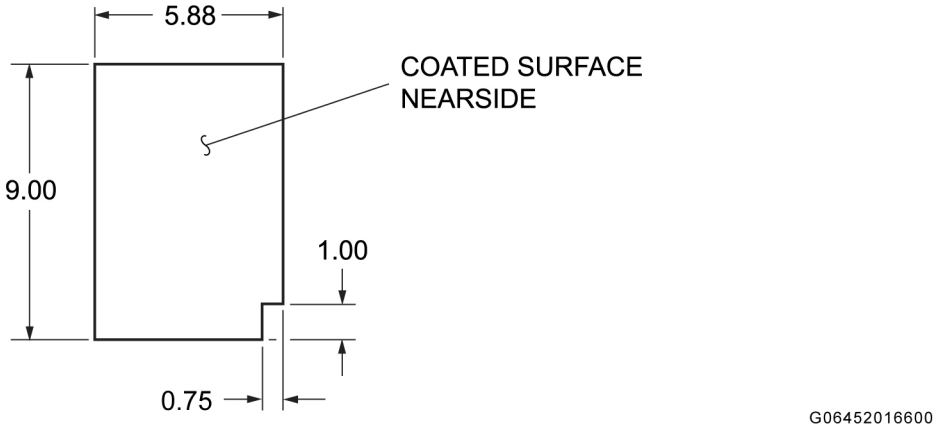


Figure 12. Insulation, Frame (4 of 13).

Notes

Refer to WP 0078, Figure 4, Item 41 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 12.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (5 of 13)

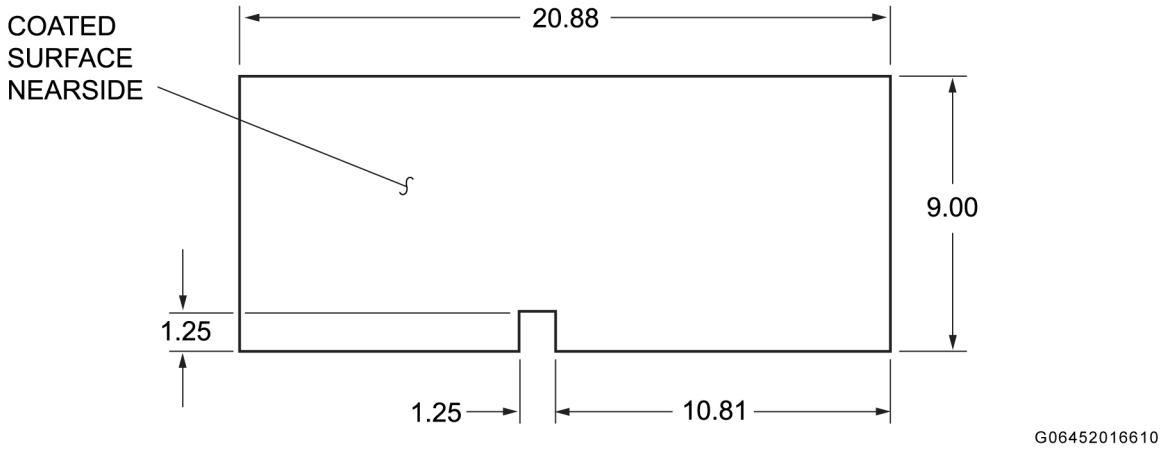


Figure 13. Insulation, Frame (5 of 13).

Notes

Refer to WP 0078, Figure 4, Item 42 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 13.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (6 of 13)

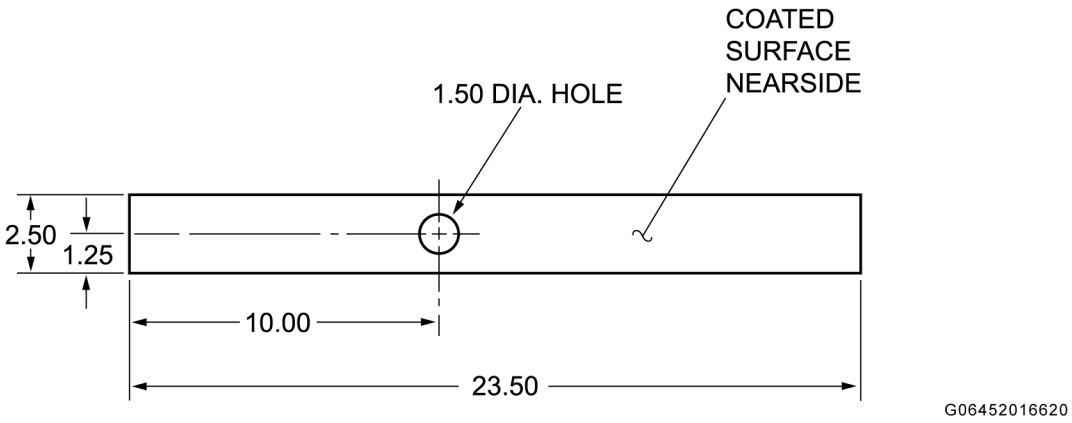


Figure 14. Insulation, Frame (6 of 13).

Notes

Refer to WP 0078, Figure 4, Item 43 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 14.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (7 of 13)

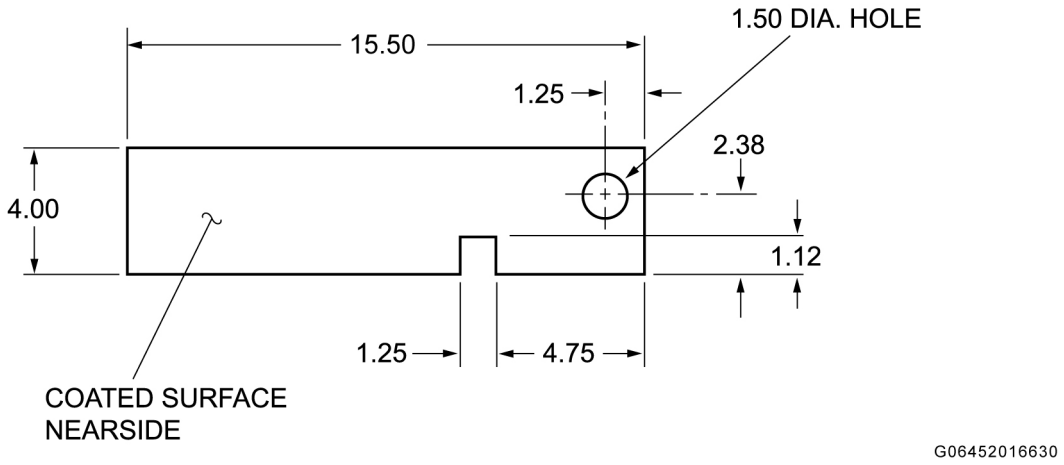


Figure 15. Insulation, Frame (7 of 13).

Notes

Refer to WP 0078, Figure 4, Item 44 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 15.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (8 of 13)

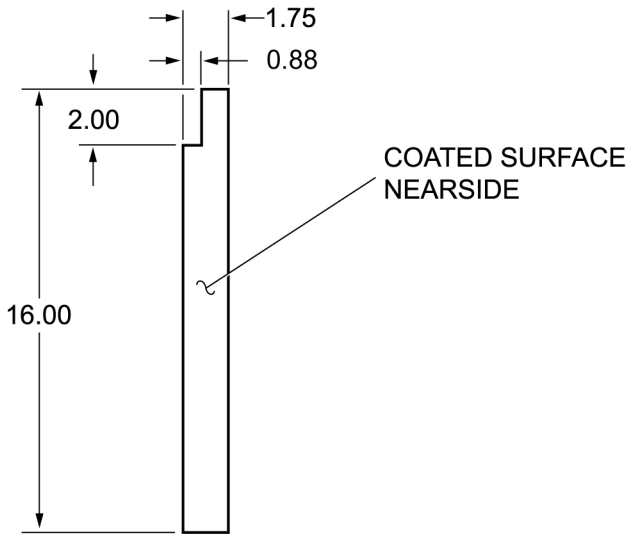


Figure 16. Insulation, Frame (8 of 13).

Notes

Refer to WP 0078, Figure 4, Item 45 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 16.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (9 of 13)

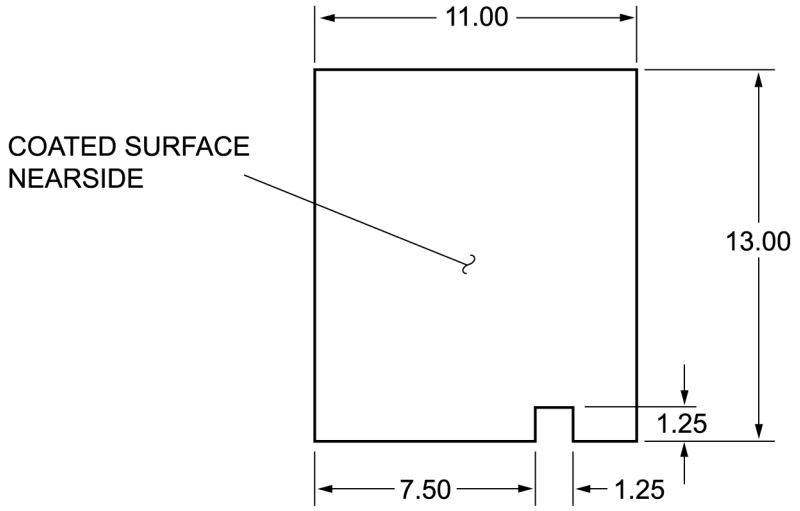


Figure 17. Insulation, Frame (9 of 13).

Notes

Refer to WP 0078, Figure 4, Item 46 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 17.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (10 of 13)

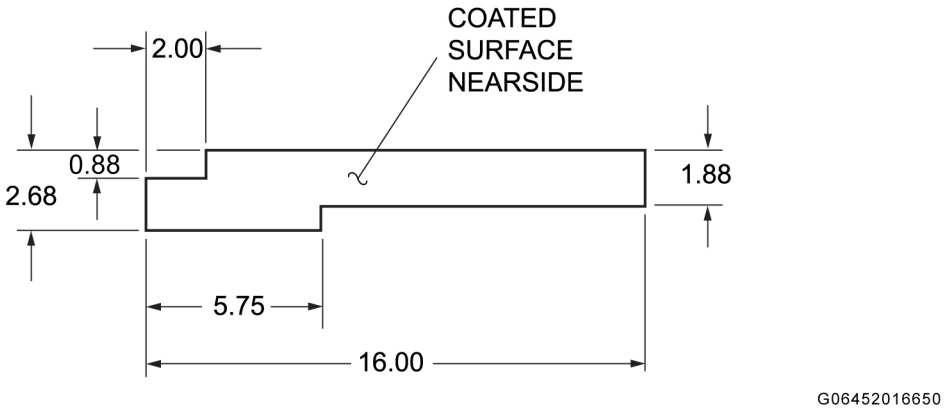


Figure 18. Insulation, Frame (10 of 13).

Notes

Refer to WP 0078, Figure 4, Item 47 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 18.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (11 of 13)

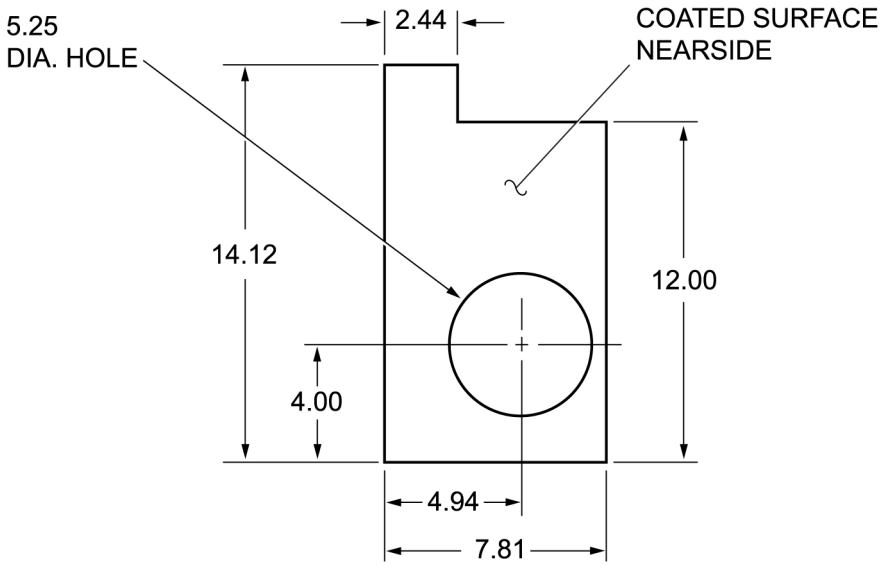


Figure 19. Insulation, Frame (11 of 13).

Notes

Refer to WP 0078, Figure 4, Item 48 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 19.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (12 of 13)

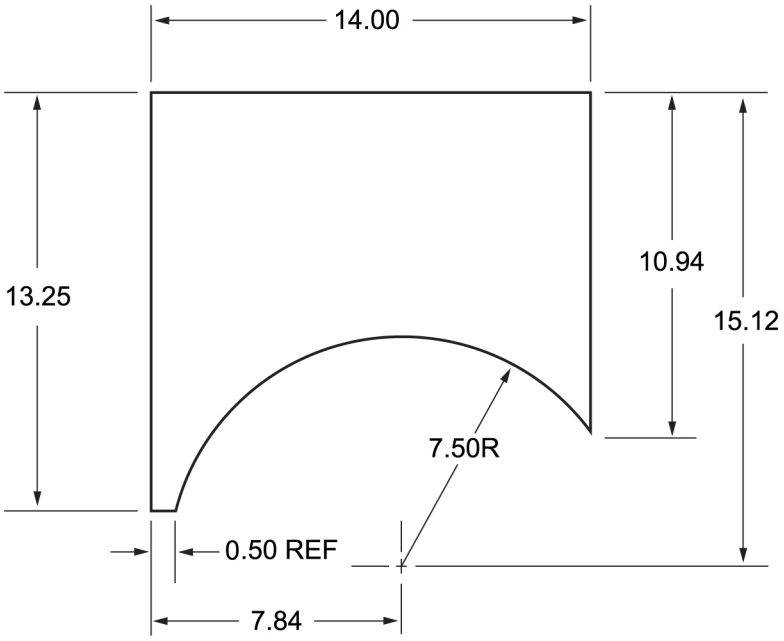


Figure 20. Insulation, Frame (12 of 13).

Notes

Refer to WP 0078, Figure 4, Item 49 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 20.
2. Apply adhesive to insulation and mating surface.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

INSULATION, FRAME (13 of 13)

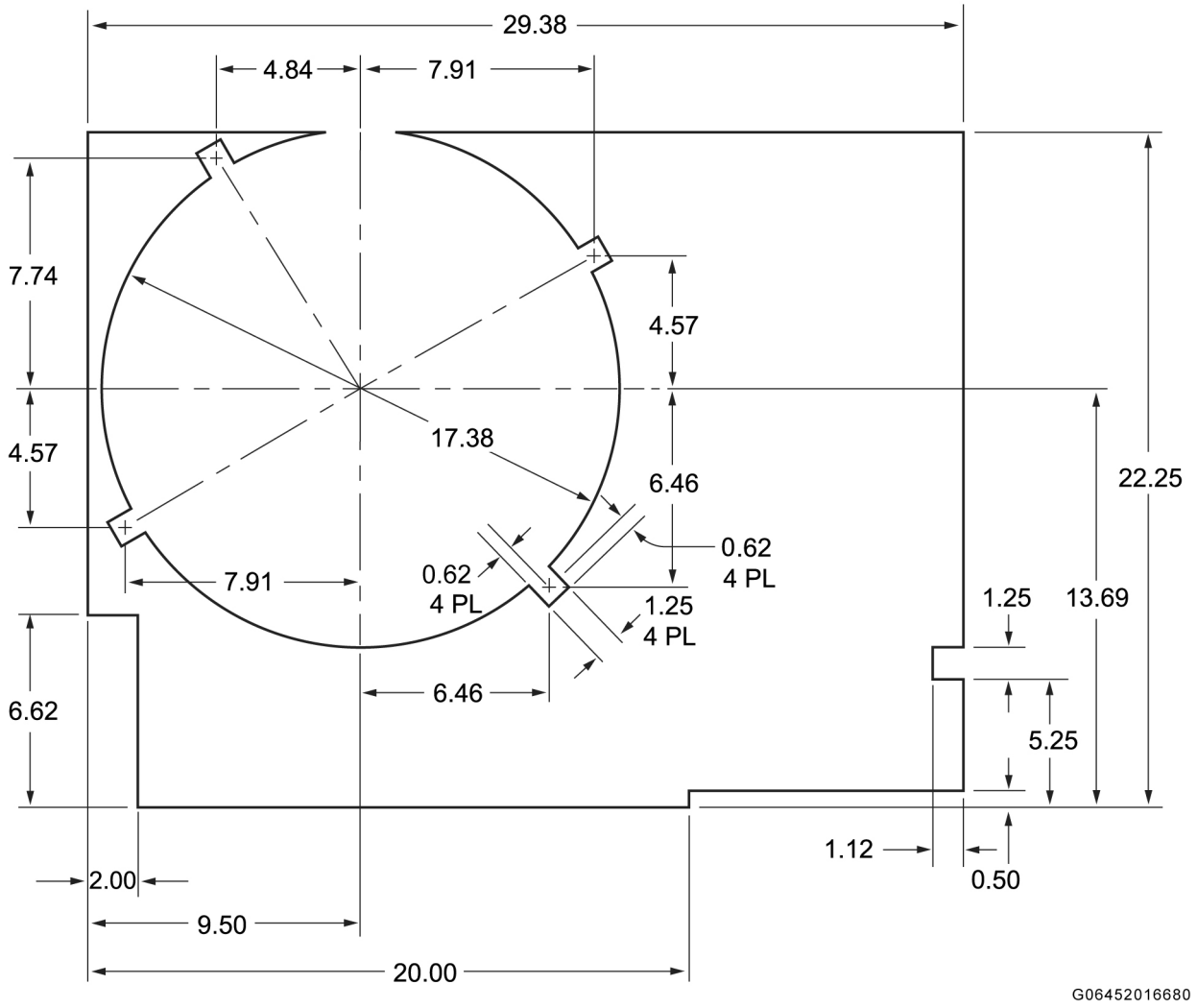


Figure 21. Insulation, Frame (13 of 13).

Notes

Refer to WP 0078, Figure 4, Item 50 for Index Reference.

All measurements are in inches.

Make from Rubber Insulation, Sheet, 0.05 inch thick. Ensolite, type MLC, color black.

Source: Ensolite, Inc. (OW711)

Adhesive, P/N R373 (5G015).

Procedure

1. Cut insulation to size as shown in Figure 21.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — INSULATIONS, VARIOUS - (CONTINUED)

2. Apply adhesive to insulation and mating surface.

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBES (NON-METALLIC)

INITIAL SETUP:

TUBE, DRAIN, CONTROL BOX ASSEMBLY

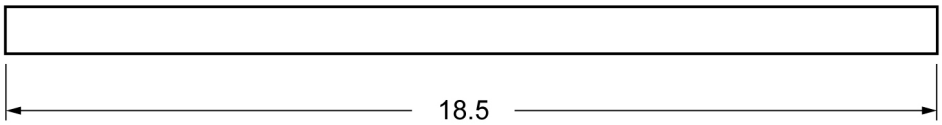


Figure 1. TUBE, DRAIN, CONTROL BOX ASSEMBLY (P/N 60075-1).

Notes

To locate the item in the RPSTL, see WP 0096, Figure 10, Item 2.

For Control Box Assembly Replacement Procedure, see WP 0025.

For Control Box Assembly Repair Procedure, see WP 0057.

Made from P/N AA00037, CAGEC 86228, 55.0 Nominal Shore, Durometer A.

Procedure

Cut to 18.5-inch length as shown in Figure 1.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBES (NON-METALLIC) - (CONTINUED)

TUBE, AIR PRESSURE SWITCH

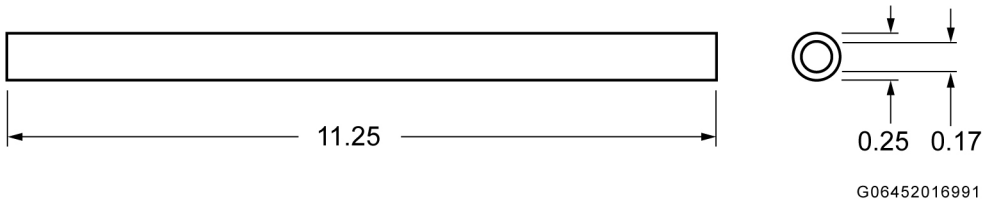


Figure 2. Tube, Air Pressure Switch (P/N 60079-1).

Notes

To locate the item in the RPSTL, see WP 0096, Figure 15, Item 6.

For Air Pressure Switch Replacement Procedure, see WP 0028.

For Air Pressure Switch Repair Procedure, see WP 0059.

Made from P/N 44-P, CAGEC 30327.

Procedure

Cut to 11.25-inch length as shown in Figure 2.

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBE ASSEMBLIES (METALLIC)

INITIAL SETUP:

TUBE ASSEMBLY, FUEL TANK / REAR PANEL

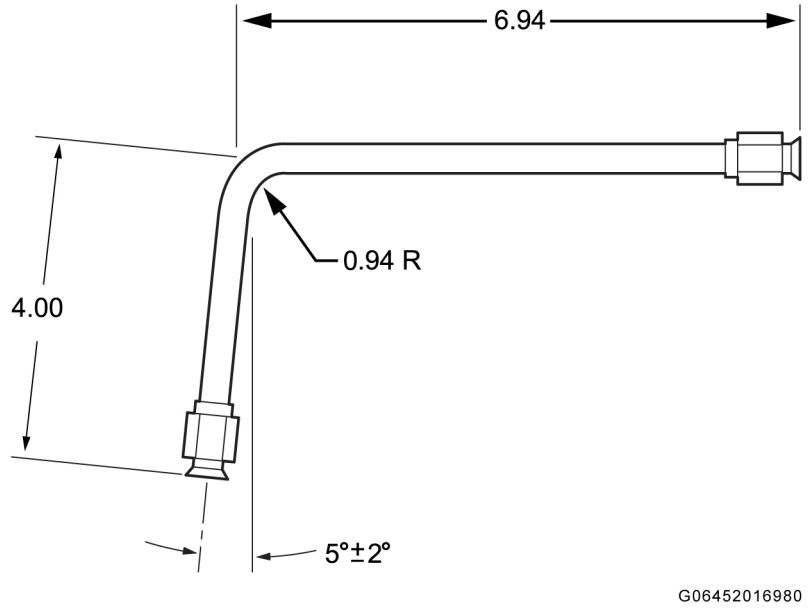


Figure 1. Tube Assembly, Fuel Tank / Rear Panel.

Notes

Item not shown in RPSTL illustrations.

For Fuel Tank Assembly Repair Procedures, see WP 0062, Figure 7, Item 2.

Additional tools required: tube bending set and flaring tool (WP 0113, Table 2. Items 6 and 8).

Make from copper tube, seamless 0.25 X 0.030 wall, per ASTM B280-83.

Procedure

1. Cut to size (11.0-inch) and bend as shown in Figure 1.
2. Install two sleeves (1), MS51533B6Z and two nuts (2), MS51531B6Z.
3. Flare per MS33583 (37° Double flare).

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBE ASSEMBLIES (METALLIC) - (CONTINUED)

TUBE ASSEMBLY, REAR PANEL / FUEL FILTER

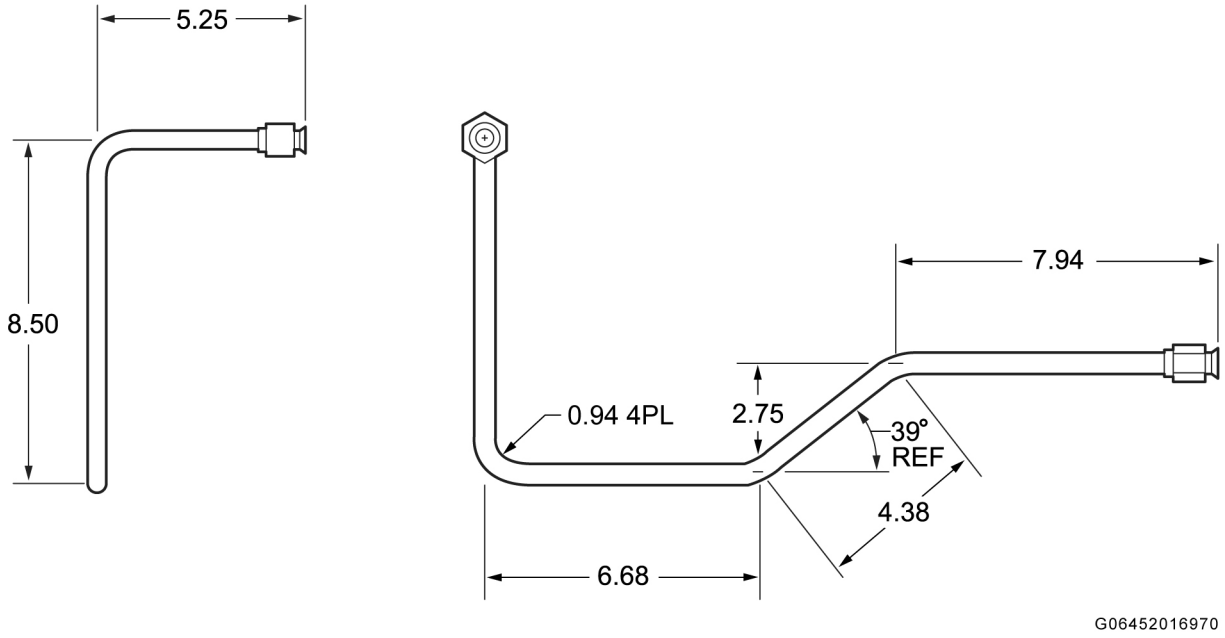


Figure 2. Tube Assembly, Rear Panel / Fuel Filter.

Notes

Item not shown in RPSTL illustrations.

For Fuel Pump and Solenoid Valves Repair Procedures, see WP 0063 (Figure 4, Item 6).

For Fuel Pump and Solenoid Valves Replacement Procedures, see WP 0032 (Figure 1, Item 6).

Additional tools required: tube bending set and flaring tool (WP 0113, Table 2. Items 6 and 8).

Make from copper tube, seamless 0.25 X 0.030 wall, per ASTM B280-83.

Procedure

1. Cut to size (31.75-inch) and bend as shown in Figure 2.
2. Install two sleeves (1), MS51533B6Z and two nuts (2), MS51531B6Z.
3. Flare per MS33583 (37° Double flare).

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBE ASSEMBLIES (METALLIC) - (CONTINUED)

TUBE ASSEMBLY, FUEL PUMP

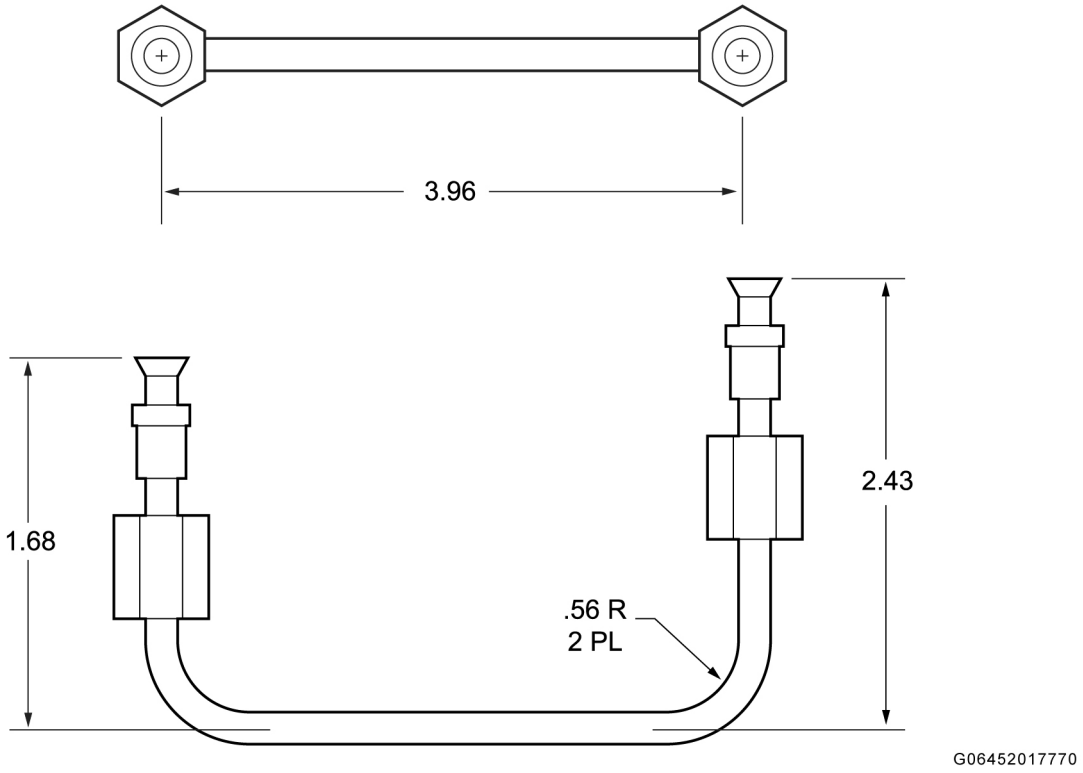


Figure 3. Tube Assembly, Fuel Pump (P/N 60484-100).

Notes

To locate the item in the RPSTL, see WP 0097, Figure 17, Item 1.

For Fuel Pump Repair and Adjustment Procedures, see WP 0063.

Additional tools required: tube bending set and flaring tool (WP 0113, Table 2. Items 6 and 8).

Make from copper tube, seamless 0.25 X 0.030 wall, per ASTM B280-83.

Procedure

1. Cut to size and bend per as shown in Figure 3.
2. Install two sleeves (1), MS51533B4Z and two nuts (2), MS51531B4Z.
3. Flare per MS33583 (37° Double flare).

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBE ASSEMBLIES (METALLIC) - (CONTINUED)

TUBE ASSEMBLY, SOLENOID / FUEL TANK

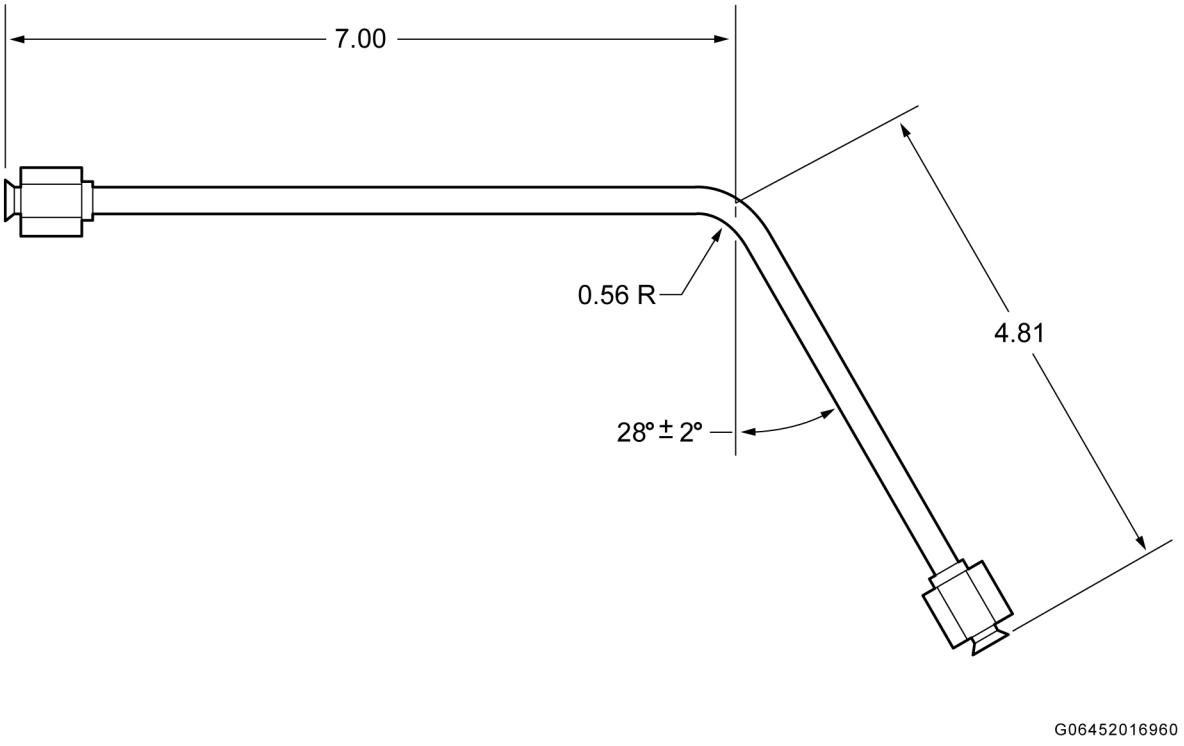


Figure 4. Tube Assembly, Solenoid / Fuel Tank (P/N 60485-100).

Notes

To locate the item in the RPSTL, see WP 0097, Figure 17, Item 9.

For Fuel Tank Assembly Repair Procedures, see WP 0062.

For Fuel Tank Assembly Replacement Procedures, see WP 0031.

Additional tools required: tube bending set and flaring tool (WP 0113, Table 2. Items 6 and 8).

Make from copper tube, seamless 0.25 X 0.030 wall, per ASTM B280-83.

Procedure

1. Cut to size (11.75 in) and bend as shown in Figure 4.
2. Install two sleeves (1), MS51533B4Z and two nuts (2), MS51531B4Z.
3. Flare per MS33583 (37° Double flare).

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBE ASSEMBLIES (METALLIC) - (CONTINUED)

TUBE ASSEMBLY, FUEL PRESSURE GUAGE

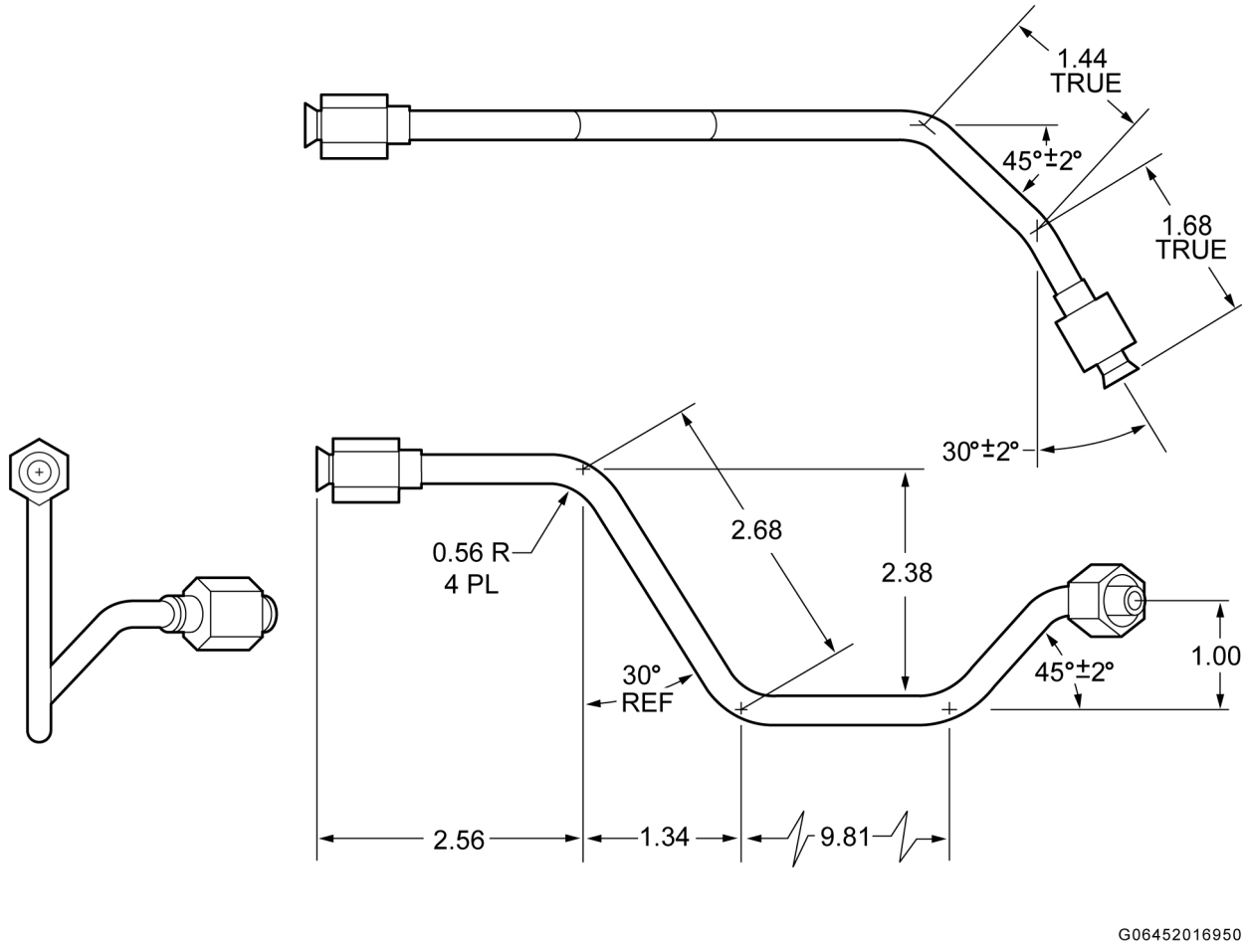


Figure 5. Tube Assembly, Fuel Pressure Gauge (P/N 60488-100).

Notes

To locate the item in the RPSTL, see WP 0096, Figure 14, Item 6.

For Fuel Pressure Gauge Replacement Procedures, see WP 0026.

Additional tools required: tube bending set and flaring tool (WP 0113, Table 2. Items 6 and 8).

Make from copper tube, seamless 0.25 X 0.030 wall, per ASTM B280-83.

Procedure

1. Cut to size (18.5 in) and bend as shown in Figure 5.
2. Install two sleeves (1), MS51533B4Z and two nuts (2), MS51531B4Z.
3. Flare per MS33583 (37° Double flare).

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBE ASSEMBLIES (METALLIC) - (CONTINUED)

TUBE ASSEMBLY, REAR PANEL

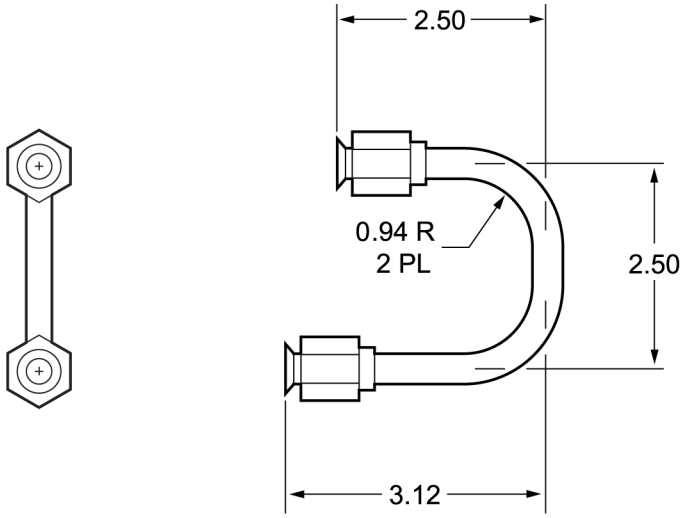


Figure 6. Tube Assembly, Rear Panel (P/N 60489-100).

Notes

To locate the item in the RPSTL, see , Item , Figure 5, Item 32.

For External Fuel Connection Repair Procedures, see WP 0053 and WP 0060.

For External Fuel Connection Replacement Procedures, see WP 0029.

Additional tools required: tube bending set and flaring tool (WP 0113, Table 2. Items 6 and 8).

Make from copper tube, seamless 0.25 X 0.032 wall, per ASTM B280-83.

Procedure

1. Cut to size and bend as shown in Figure 6.
2. Install two sleeves (1), MS51533B6Z and two nuts (2), MS51531B6Z.
3. Flare per MS33583 (37° Double flare).

ILLUSTRATED LIST OF MANUFACTURED ITEMS — TUBE ASSEMBLIES (METALLIC) - (CONTINUED)

TUBE ASSEMBLY, FUEL PUMP

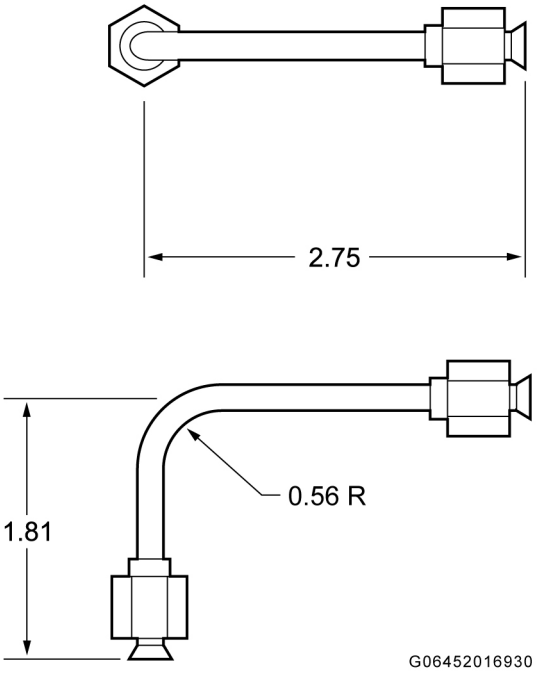


Figure 7. Tube Assembly, Fuel Pump (P/N 60487-100).

Notes

To locate the item in the RPSTL, see WP 0097, Figure 17, Item 5.

For Fuel Pump Repair and Adjustment Procedures, see WP 0063.

Additional tools required: tube bending set and flaring tool (WP 0113, Table 2. Items 6 and 8).

Make from copper tube, seamless 0.25 X 0.030 wall, per ASTM B280-83.

Procedure

1. Cut to size and bend as shown in Figure 7.
2. Install two sleeves (1), MS51533B4Z and two nuts (2), MS51531B4Z.
3. Flare per MS33583 (37° Double flare).

END OF WORK PACKAGE

FIELD MAINTENANCE

ILLUSTRATED LIST OF MANUFACTURED ITEMS — WIRES AND ELECTRICAL CABLE

INITIAL SETUP:

WIRE, EXTERNAL POWER CABLE ADAPTER CORD

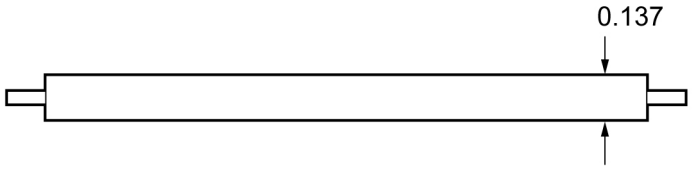


Figure 1. Wire, External Power Cable Adapter Cord (P/N 13229E8567-2, 13229E8567-3, 13229E8567-4).

Notes

To locate the item in the RPSTL, see WP 0103, Figure 32, Items 7 to 9.

For External Power Cable Adapter Cord Repair Procedure, see WP 0075.

Black wire made from P/N M5086-1-12-0, CAGEC 81343.

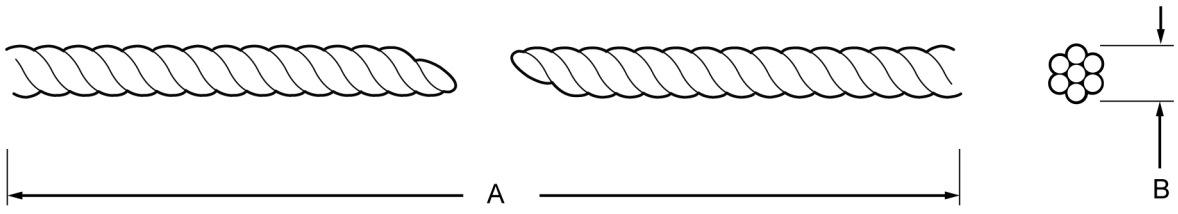
White wire made from P/N M5086-1-12-9, CAGEC 81343.

Green wire made from P/N M5086-1-12-5, CAGEC 81343.

Procedure

1. Cut all wires to appropriate length and strip length.
2. Cut Front Side Door hinge to 21.5-inch length.
3. Cut Control Box Cover hinge to 15.5-inch length.

WIRE, BRAID



INDEX	A (INCHES)	B (INCHES)
1	16	0.5
2	53	0.5
3	10	0.5
4	15	0.219

Figure 2. Wire, Braid (P/N 60216-32).

Notes

To locate the item in the RPSTL, see WP 0100, Figure 26, Item 24.

For Thermostat Assembly Replacement Procedure, see WP 0039.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — WIRES AND ELECTRICAL CABLE - (CONTINUED)

For Thermostat Assembly Repair Procedure, see WP 0069.

Made from P/N 8669, CAGEC 90816.

Procedure

Cut all wires to appropriate length and strip length as shown in Figure 2.

ILLUSTRATED LIST OF MANUFACTURED ITEMS — WIRES AND ELECTRICAL CABLE - (CONTINUED)

ELECTRICAL WIRES AND CABLE

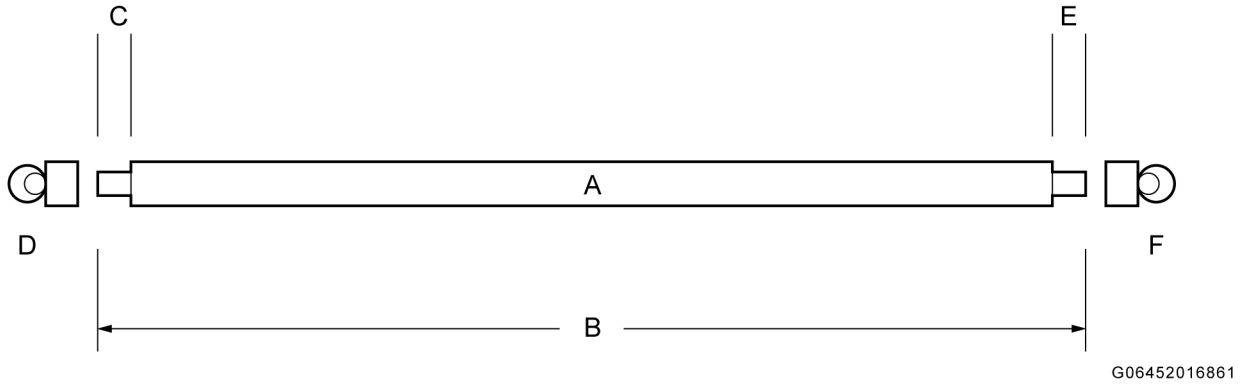


Figure 3. Wires.

Notes

Make from Parts Lists.

Procedure

1. Cut to length as shown in Figure 3 and Table 1, Column B.
2. Cut strip length as shown Figure 3 and in Table 1, Column C.
3. Attach terminals.

Table Legend

* Item used on ASH Model H-120

** Item used on ASH Model H-120-1

Table 1. ASH Wire List

WIRE ASSY INDEX #	WIRE INDEX # A	WIRE LENGTH INCHES B	STRIP LENGTH C	TERMINAL INDEX # D	FROM	TO	STRIP LENGTH E	TERMINAL INDEX # F
1	—	—	—	—	120 VAC	J1–A	—	—
2	—	—	—	—	Neutral	J1–B	—	—
3	—	—	—	—	Ground	J1–C	—	—
4	—	—	—	—	P1–A	TB1–1	—	5
5	—	—	—	—	P1–B	TB1–2	—	5
6	—	—	—	—	P1–C	G-1	—	9
7	1	14.0	0.38	5	TB1-1	CB1–1	0.38	8
8	1	13.0	0.38	8	CB1–2	S1–5	0.38	6
9	1	4.0	0.38	6	S1–5	S1–9	0.38	6
10	1	12.0	0.38	5	TB1–2	S1–1	0.38	6
11	1	16.0	0.38	6	S1–2	TB1–3	0.38	5
12	1	3.5	0.38	6	S1–2	S1–3	0.38	6
13	1	3.5	0.38	6	S1–3	S1–4	0.38	6
14	1	3.5	0.38	6	S1–8	S1–7	0.38	6
15	1	3.5	0.38	6	S1–7	S1–6	0.38	6
16	1	15.0	0.38	6	S1–6	TB1–8	0.38	5
17	2	17.5	0.25	3	TB1–8	DS1–POS	0.25	12

ILLUSTRATED LIST OF MANUFACTURED ITEMS — WIRES AND ELECTRICAL CABLE - (CONTINUED)

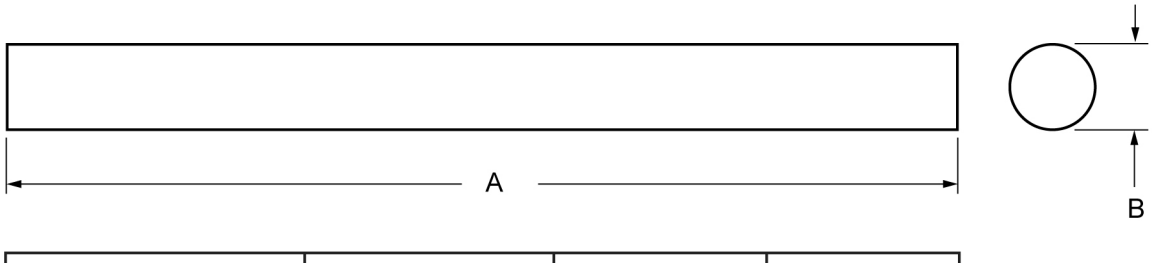
WIRE ASSY INDEX #	WIRE INDEX # A	WIRE LENGTH INCHES B	STRIP LENGTH C	TERMINAL INDEX # D	FROM	TO	STRIP LENGTH E	TERMINAL INDEX # F
18	2	16.0	0.25	12	DS1–NEG	TB1–3	0.25	3
*19	—	—	0.25	3	TB1–8	F1–BLK	—	—
**19	2	44.0	0.25	3	TB1–8	TR1–BLU	0.25	10
*20	—	—	—	—	F1–BLK	TB1–3	0.25	3
**20	2	44.0	0.25	10	TR1–WHT	TB1–3	0.25	3
21	1	39.0	0.38	5	TB1–8	B-T1, T5	0.38	11
22	1	40.0	0.38	11	B1–T4, T8	TB1–3	0.25	5
23	1	49.0	0.38	6	B1–GRD	G1	0.38	9
24	2	3.5	0.25	4	S1–7	S4–2	0.25	3
25	2	20.0	0.25	3	S4–1	TB1–9	0.25	3
26	—	—	0.25	3	TB1–9	L2–BLK	—	—
27	—	—	—	—	L2–BLK	TB1–4	0.25	3
28	2	3.5	0.25	4	S1–12	S1–11	0.25	4
29	2	20.0	0.25	3	TB1–10	S7–2	0.25	3
30	2	19.0	0.25	3	S7–1	TB1–12	0.25	3
31	2	20.0	0.25	3	TB1–12	L3–POS	0.25	12
32	2	20.0	0.25	12	L3–NEG	TB1–4	0.25	3
33	2	15.0	0.25	4	S1–11	TB1–10	0.25	3
34	2	23.0	0.25	3	TB1–10	S5–COM	0.25	12
35	2	22.0	0.25	12	S5–N.O.	TB1–11	0.25	3
36	—	11.0	0.25	3	TB1–11	B2–BLK	—	—
37	—	12.0	—	—	B2–WHT	TB1–5	0.25	3
38	—	13.0	—	—	B2–GRN/YEL	G1	0.25	7
39	2	16.0	0.25	3	TB1–11	K1–BLK	0.25	10
40	2	10.0	0.25	4	S1–12	TR2–BLK	0.25	10
41	2	4.0	0.25	10	TR2–WHT	TB1–7	0.25	3
42	2	12.0	0.25	4	S1–13	TR2–C	0.25	3
43	2	5.0	0.25	3	TR2–R	TB3–3	0.25	3
44	2	—	0.25	—	TB3–3	J3–B	0.25	—
45	2	11.0	0.25	4	S1–13	TB3–2	0.25	3
46	2	—	0.25	—	TB3–2	J3–A	0.25	—
47	2	19.0	0.25	3	TB3–2	CB2–1	0.25	12
48	2	19.0	0.25	12	CB2–2	TB3–1	0.25	3
49	2	21.0	0.25	3	TB3–1	K1–W	0.25	3
50	2	12.0	0.25	4	S1–16	TB35	0.25	3
51	2	—	0.25	—	TB3–4	J3–C	0.25	—
52	2	62.00	0.25	3	TB3–4	S3–1	0.25	12
53	2	60.00	0.25	12	S3–3	TB3–5	0.25	3
54	2	21.0	0.25	3	TB3–5	K1–B	0.25	3
55	2	—	0.25	—	P3–A	TB2–2	0.25	—
56	2	—	0.25	—	P3–B	TB2–3	0.25	—
57	2	—	0.2	—	5P3–C	TB2–1	0.25	—
58	2	21.0	0.25	3	K1–F1	TB3–6	0.25	3
59	2	11.0	0.25	3	TB3–6	D1–YEL	0.25	10
60	2	11.0	0.25	10	D1–YEL	TB3–7	0.25	3
61	2	21.0	0.25	3	TB3–7	K1–F2	0.25	3
62	2	15.0	0.25	10	K1–WHT	TB1–6	0.25	3
63	2	19.0	0.25	10	K1–ORG	TB3–8	0.25	3
64	2	18.0	0.25	3	TB3–8	TT	0.25	3
65	2	12.0	0.25	3	TT	TB1–6	0.25	3
66	14	17.0	—	9	G1	REAR DOOR	—	6

ILLUSTRATED LIST OF MANUFACTURED ITEMS — WIRES AND ELECTRICAL CABLE - (CONTINUED)

WIRE ASSY INDEX #	WIRE INDEX # A	WIRE LENGTH INCHES B	STRIP LENGTH C	TERMINAL INDEX # D	FROM	TO	STRIP LENGTH E	TERMINAL INDEX # F
67	14	15.0	—	9	B2 FRAME	FRONT DOOR	—	6
68	2	61.00	0.25	3	TB3–8	S2–1	0.25	12
69	2	61.0	0.25	12	S2–3	TB3–9	0.25	3
70	—	24.0	0.25	3	TB3–9	L1–BLK	—	—
71	—	24.0	—	—	L1–BLK	TB1–7	0.25	3
72	2	61.0	0.25	12	S2–2	TB3–10	0.25	3
73	2	13.0	0.25	3	TB3–10	DS2–POS	0.25	12
74	2	17.0	0.25	12	DS2–NEG	TB1–6	0.25	3
75	2	19.0	0.25	10	K1–RED/YEL	TB3–11	0.25	3
76	2	15.0	0.25	3	TB3–11	DS3–POS	0.25	12
77	2	17.0	0.25	12	DS3–NEG	TB1–7	0.25	3
78	1	17.0	0.38	9	G1	C.P.-LID	0.38	5
79	1	31.0	0.38	9	G1	FRAME	0.38	9
80					Deleted			
*81	2	44.0	0.25	7	F1–G	G1	0.25	10
*82	2	6.0	0.25	4	F1–G	GNDT	0.25	7
**82	2	6.0	0.25	4	TR1–G	GNDT	0.25	7

ILLUSTRATED LIST OF MANUFACTURED ITEMS — WIRES AND ELECTRICAL CABLE - (CONTINUED)

Cables, Electrical



INDEX	A (INCHES)	B (INCHES)	QTY
1	310	0.435	1
2	416	0.635	1

G06452016780

Figure 4. Cable, Electrical (P/N 60411-7 and P/N 60411-17).

Notes

To locate the item in the RPSTL, see WP 0101, Figure 30, Item 14; and WP 0102, Figure 31, Item 11.

Index #1 made from CO-03HOF(3/16) 0435, CAGEC 81349.

Index #2 made from CO-03HOF(3/12) 0635, CAGEC 81349.

Procedure

Index #1: Cut to 310 inches as shown in Figure 4.

Index # 2: Cut to 416 inches as shown in Figure 4 .

END OF WORK PACKAGE

FIELD MAINTENANCE

TORQUE LIMITS

INTRODUCTION

This work package contains the torque standards for specific types and sizes of hardware. It defines the different types of bolts by grade. Special torque values and sequences are listed in the specific maintenance procedure.

TORQUE TABLES

HOW TO USE TORQUE TABLES

1. Measure diameter of screw being installed (Figure 1).
2. Count number of threads per inch or use a pitch grade (Figure 1).

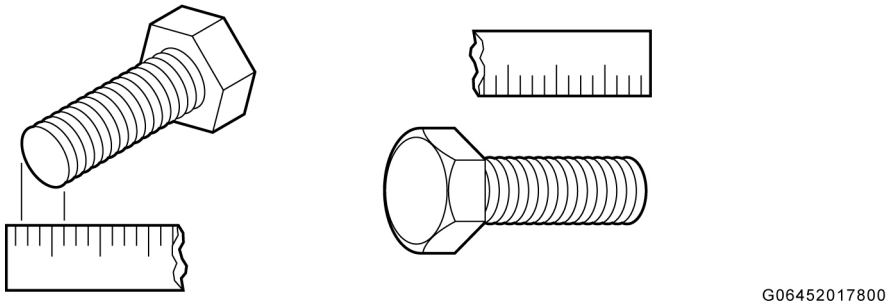


Figure 1. Measuring Diameter and Threads per Inch.

3. Under heading SIZE, look down DIA IN column until you find diameter of screw being installed. (There will usually be two lines beginning with same size.)
4. Under heading SIZE, look down THREADS PER IN column to find numbers of threads per inch that match number of threads counted in step 2. (Not required for metric screws.)

NOTE

Manufacturer's marks may vary. Standard is all SAE Grade 5 (3-line). Metric screws are of three grades: 8.8, 10.9, and 12.9. Grades and manufacturer's marks appear on the screw head.

6. To find the grade screw being installed, match markings on screw head to correct picture of CAPSCREW HEAD MARKINGS in illustration preceding respective torque table.

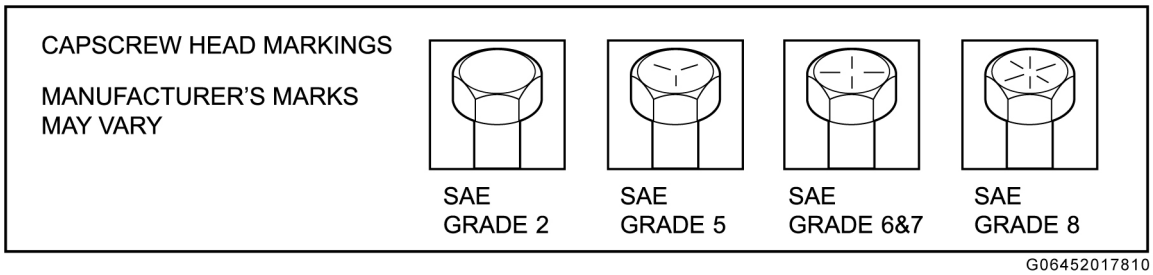


Figure 2. Standard Capscrew Head Markings.

TORQUE LIMITS - (CONTINUED)

Table 1. Standard Dry Torque Limits

SIZE			SAE GRADE NO. 2		SAE GRADE NO. 5		SAE GRADE NO. 6 OR 7		SAE GRADE NO. 8	
DIA IN	THREADS PER IN	DIA MM	LB-FT	NM	LB-FT	NM	LB-FT	NM	LB-FT	NM
1/4	20	6.35	5	7	8	11	10	14	12	16
1/4	28	6.35	6	9	10	14	12	16	14	19
5/16	18	7.94	11	15	17	23	21	28	25	34
5/16	24	7.94	12	16	19	26	24	33	25	34
3/8	16	9.53	20	27	30	41	40	54	45	61
3/8	24	9.53	23	31	35	47	45	61	50	68
7/16	14	11.11	30	41	50	68	60	81	70	95
7/16	20		35	47	55	75	70	95	90	108
1/2	13	12.70	50	68	75	102	95	129	110	149
1/2	20		55	75	90	122	100	135	120	163
9/16	12	14.29	65	85	110	149	135	183	150	203
9/16	18		75	102	120	163	150	203	170	231
5/8	11	15.88	90	122	150	203	190	258	220	298
5/8	18		100	136	180	244	210	285	240	325
3/4	10	19.05	160	217	260	353	240	434	380	515
3/4	16		180	244	300	407	360	488	420	597
7/8	9	22.23	140	190	400	542	520	705	600	814
7/8	14		155	210	440	597	580	786	660	895
1	8	25.40	220	298	580	786	800	1085	900	1220
1	12		240	325	640	868	860	1166	1000	1350
1–1/8	7	25.58	300	407	800	1085	1120	1519	1280	1736
1–1/8	12		340	461	880	1193	1260	1709	1440	1953
1–1/4	7	31.75	420	570	1120	1519	1580	2142	1820	2468
1–1/4	12		460	624	1240	1681	1760	2387	2000	2712
1–3/8	6	34.93	560	759	1460	1980	2080	2820	2380	3227
1–3/8	12		640	868	1680	2278	2360	3227	2720	3688
1–1/2	6	38.10	740	1003	1940	2631	2780	3770	3160	4285
1–1/2	12		840	1139	2200	2983	3100	4204	3560	4827

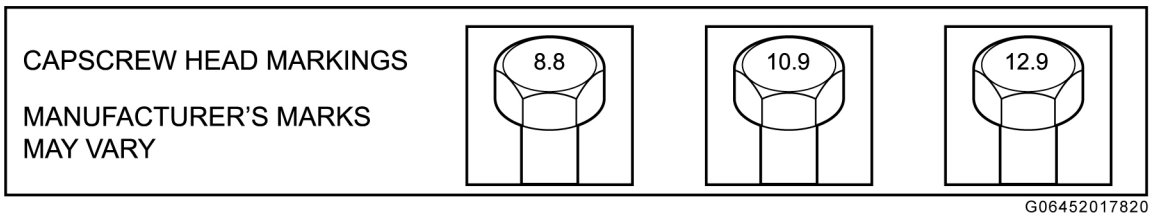


Figure 3. Metric Capscrew Head Markings.

Table 2. Metric Dry Torque Limits

SIZE		METRIC GRADE 8.8		METRIC GRADE 10.9		METRIC GRADE 12.9	
DIA IN	DIA MM	LB-FT	NM	LB-FT	NM	LB-FT	NM
0.157	4	2	3	3	4	4	5
0.197	5	4	5	6	8	7	9
0.237	6	7	9	10	14	11	15
0.276	7	11	15	16	32	20	27
0.315	8	18	24	25	34	29	39
0.394	10	32	43	47	64	58	79
0.473	12	58	79	83	113	100	136

TORQUE LIMITS - (CONTINUED)

SIZE		METRIC GRADE 8.8		METRIC GRADE 10.9		METRIC GRADE 12.9	
DIA IN	DIA MM	LB-FT	NM	LB-FT	NM	LB-FT	NM
0.630	16	144	195	196	266	235	319
0.709	18	190	258	269	365	323	438
0.788	20	260	353	366	496	440	597
0.867	22	368	499	520	705	678	919
0.946	24	470	637	664	900	794	1077
1.064	27	707	959	996	1351	1235	1675
1.182	30	967	1311	1357	1840	1630	2210

END OF WORK PACKAGE

FIELD MAINTENANCE

WIRING DIAGRAMS

INITIAL SETUP:

Personnel Required
Quartermaster and Chemical Equipment Repairer,
91J - (1)

INTRODUCTION

This work package contains the wire list for the ASH (Table 1) and wiring diagrams.

ABBREVIATIONS

All abbreviations are in accordance with ASME Y14.38.

WIRE LIST

Use Figure 1 and Table 1 to manufacture wires.

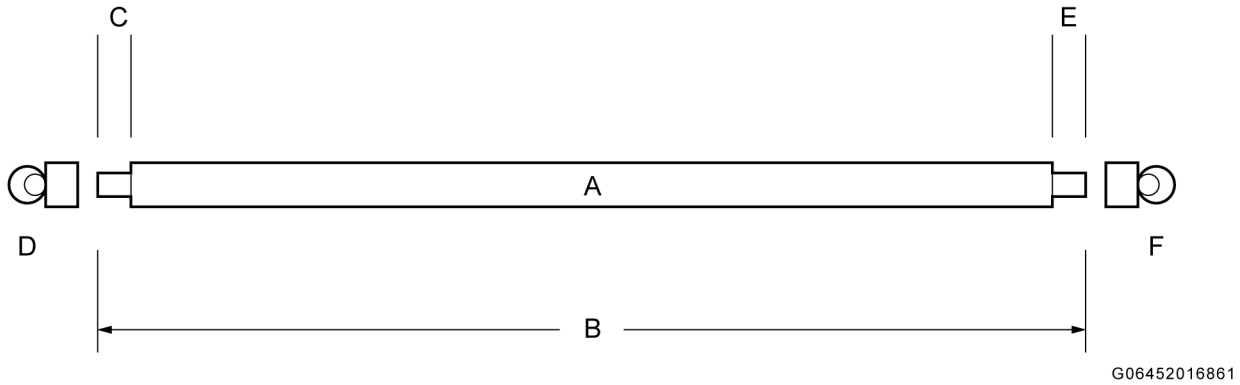


Figure 1. Wire Dimensions.

Table 1. ASH Wire List

WIRE ASSY INDEX #	WIRE INDEX # A	WIRE LENGTH INCHES B	STRIP LENGTH C	TERMINAL INDEX # D	FROM	TO	STRIP LENGTH E	TERMINAL INDEX # F
1	—	—	—	—	120 VAC	J1–A	—	—
2	—	—	—	—	Neutral	J1–B	—	—
3	—	—	—	—	Ground	J1–C	—	—
4	—	—	—	—	P1–A	TB1–1	—	5
5	—	—	—	—	P1–B	TB1–2	—	5
6	—	—	—	—	P1–C	G-1	—	9
7	1	14.0	0.38	5	TB1-1	CB1–1	0.38	8
8	1	13.0	0.38	8	CB1–2	S1–5	0.38	6
9	1	4.0	0.38	6	S1–5	S1–9	0.38	6
10	1	12.0	0.38	5	TB1–2	S1–1	0.38	6
11	1	16.0	0.38	6	S1–2	TB1–3	0.38	5
12	1	3.5	0.38	6	S1–2	S1–3	0.38	6
13	1	3.5	0.38	6	S1–3	S1–4	0.38	6
14	1	3.5	0.38	6	S1–8	S1–7	0.38	6
15	1	3.5	0.38	6	S1–7	S1–6	0.38	6
16	1	15.0	0.38	6	S1–6	TB1–8	0.38	5
17	2	17.5	0.25	3	TB1–8	DS1–POS	0.25	12

WIRING DIAGRAMS - (CONTINUED)

WIRE ASSY INDEX #	WIRE INDEX # A	WIRE LENGTH INCHES B	STRIP LENGTH C	TERMINAL INDEX # D	FROM	TO	STRIP LENGTH E	TERMINAL INDEX # F
18	2	16.0	0.25	12	DS1–NEG	TB1–3	0.25	3
*19	—	—	0.25	3	TB1–8	F1–BLK	—	—
**19	2	44.0	0.25	3	TB1–8	TR1–BLU	0.25	10
*20	—	—	—	—	F1–BLK	TB1–3	0.25	3
**20	2	44.0	0.25	10	TR1–WHT	TB1–3	0.25	3
21	1	39.0	0.38	5	TB1–8	B-T1, T5	0.38	11
22	1	40.0	0.38	11	B1–T4, T8	TB1–3	0.25	5
23	1	49.0	0.38	6	B1–GRD	G1	0.38	9
24	2	3.5	0.25	4	S1–7	S4–2	0.25	3
25	2	20.0	0.25	3	S4–1	TB1–9	0.25	3
26	—	—	0.25	3	TB1–9	L2–BLK	—	—
27	—	—	—	—	L2–BLK	TB1–4	0.25	3
28	2	3.5	0.25	4	S1–12	S1–11	0.25	4
29	2	20.0	0.25	3	TB1–10	S7–2	0.25	3
30	2	19.0	0.25	3	S7–1	TB1–12	0.25	3
31	2	20.0	0.25	3	TB1–12	L3–POS	0.25	12
32	2	20.0	0.25	12	L3–NEG	TB1–4	0.25	3
33	2	15.0	0.25	4	S1–11	TB1–10	0.25	3
34	2	23.0	0.25	3	TB1–10	S5–COM	0.25	12
35	2	22.0	0.25	12	S5–N.O.	TB1–11	0.25	3
36	—	11.0	0.25	3	TB1–11	B2–BLK	—	—
37	—	12.0	—	—	B2–WHT	TB1–5	0.25	3
38	—	13.0	—	—	B2–GRN/YEL	G1	0.25	7
39	2	16.0	0.25	3	TB1–11	K1–BLK	0.25	10
40	2	10.0	0.25	4	S1–12	TR2–BLK	0.25	10
41	2	4.0	0.25	10	TR2–WHT	TB1–7	0.25	3
42	2	12.0	0.25	4	S1–13	TR2–C	0.25	3
43	2	5.0	0.25	3	TR2–R	TB3–3	0.25	3
44	2	—	0.25	—	TB3–3	J3–B	0.25	—
45	2	11.0	0.25	4	S1–13	TB3–2	0.25	3
46	2	—	0.25	—	TB3–2	J3–A	0.25	—
47	2	19.0	0.25	3	TB3–2	CB2–1	0.25	12
48	2	19.0	0.25	12	CB2–2	TB3–1	0.25	3
49	2	21.0	0.25	3	TB3–1	K1–W	0.25	3
50	2	12.0	0.25	4	S1–16	TB35	0.25	3
51	2	—	0.25	—	TB3–4	J3–C	0.25	—
52	2	62.00	0.25	3	TB3–4	S3–1	0.25	12
53	2	60.00	0.25	12	S3–3	TB3–5	0.25	3
54	2	21.0	0.25	3	TB3–5	K1–B	0.25	3
55	2	—	0.25	—	P3–A	TB2–2	0.25	—
56	2	—	0.25	—	P3–B	TB2–3	0.25	—
57	2	—	0.2	—	5P3–C	TB2–1	0.25	—
58	2	21.0	0.25	3	K1–F1	TB3–6	0.25	3
59	2	11.0	0.25	3	TB3–6	D1–YEL	0.25	10
60	2	11.0	0.25	10	D1–YEL	TB3–7	0.25	3
61	2	21.0	0.25	3	TB3–7	K1–F2	0.25	3
62	2	15.0	0.25	10	K1–WHT	TB1–6	0.25	3
63	2	19.0	0.25	10	K1–ORG	TB3–8	0.25	3
64	2	18.0	0.25	3	TB3–8	TT	0.25	3
65	2	12.0	0.25	3	TT	TB1–6	0.25	3
66	14	17.0	—	9	G1	REAR DOOR	—	6

WIRING DIAGRAMS - (CONTINUED)

WIRE ASSY INDEX #	WIRE INDEX # A	WIRE LENGTH INCHES B	STRIP LENGTH C	TERMINAL INDEX # D	FROM	TO	STRIP LENGTH E	TERMINAL INDEX # F
67	14	15.0	—	9	B2 FRAME	FRONT DOOR	—	6
68	2	61.00	0.25	3	TB3–8	S2–1	0.25	12
69	2	61.0	0.25	12	S2–3	TB3–9	0.25	3
70	—	24.0	0.25	3	TB3–9	L1–BLK	—	—
71	—	24.0	—	—	L1–BLK	TB1–7	0.25	3
72	2	61.0	0.25	12	S2–2	TB3–10	0.25	3
73	2	13.0	0.25	3	TB3–10	DS2–POS	0.25	12
74	2	17.0	0.25	12	DS2–NEG	TB1–6	0.25	3
75	2	19.0	0.25	10	K1–RED/YEL	TB3–11	0.25	3
76	2	15.0	0.25	3	TB3–11	DS3–POS	0.25	12
77	2	17.0	0.25	12	DS3–NEG	TB1–7	0.25	3
78	1	17.0	0.38	9	G1	C.P.-LID	0.38	5
79	1	31.0	0.38	9	G1	FRAME	0.38	9
80					Deleted			
*81	2	44.0	0.25	7	F1–G	G1	0.25	10
*82	2	6.0	0.25	4	F1–G	GNDT	0.25	7
**82	2	6.0	0.25	4	TR1–G	GNDT	0.25	7

NOTE

* Item used on ASH Model H-120

** Item used on ASH Model H-120-1

ABBREVIATIONS

All abbreviations are in accordance with ASME Y14.38.

WIRING DIAGRAMS - (CONTINUED)

WIRING DIAGRAMS

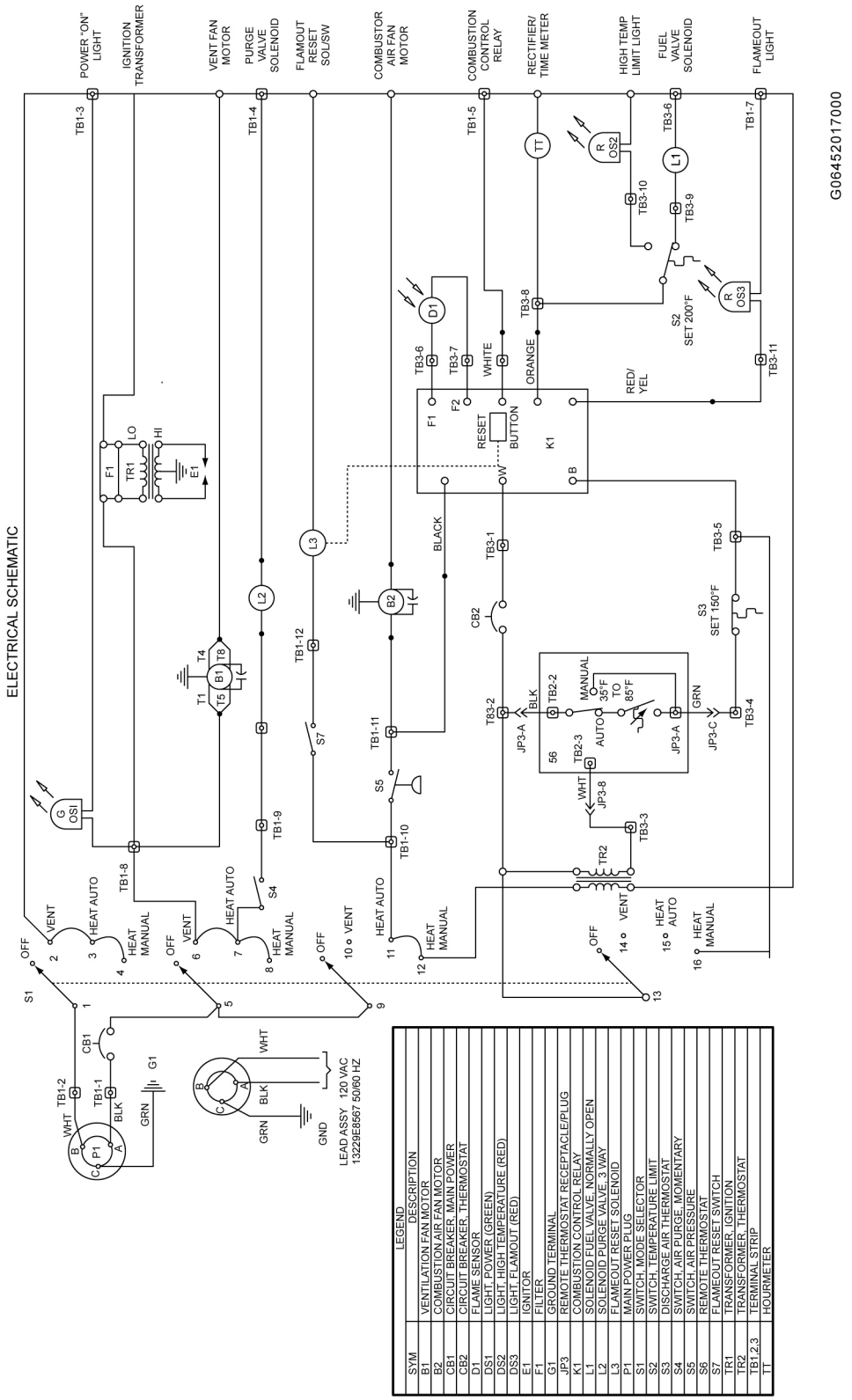


Figure 2. ASH Electrical Schematic.

WIRING DIAGRAMS - (CONTINUED)

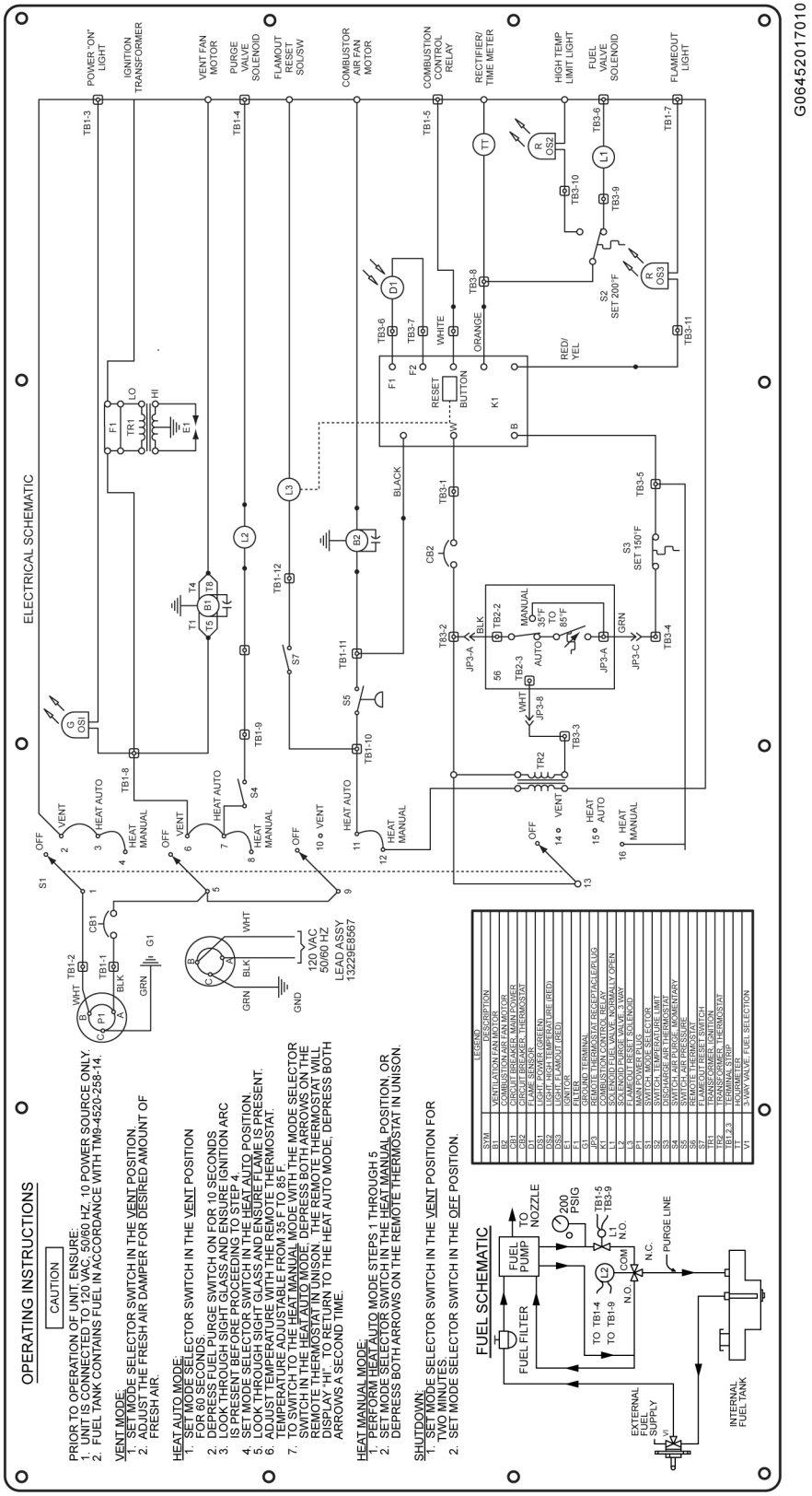

G06452017010
ELECTRICAL SCHEMATIC
OPERATING INSTRUCTIONS
CAUTION
PRIOR TO OPERATION OF UNIT, ENSURE:
1. UNIT IS CONNECTED TO 120 VAC, 50/60 HZ, 10 POWER SOURCE ONLY.
2. FUEL TANK CONTAINS FUEL IN ACCORDANCE WITH TM9-4520-258-14.
VENT MODE:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION.
2. ADJUST THE FRESH AIR DAMPER FOR DESIRED AMOUNT OF FRESH AIR.
HEAT AUTO MODE:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION FOR 60 SECONDS.
2. DEPRESS FUEL PURGE SWITCH ON FOR 10 SECONDS
3. LOOK THROUGH SIGHT GLASS AND ENSURE IGNITION ARC IS PRESENT BEFORE PROCEEDING TO STEP 4.
4. SET MODE SELECTOR SWITCH IN THE HEAT AUTO POSITION.
5. LOOK THROUGH SIGHT GLASS AND ENSURE FLAME IS PRESENT.
6. ADJUST TEMPERATURE WITH THE REMOTE THERMOSTAT.
7. TEMPERATURE ADJUSTABLE FROM 35 F TO 85 F.
TO SWITCH TO THE HEAT MANUAL MODE, PRESS BOTH ARROWS ON THE REMOTE THERMOSTAT IN UNISON. THE REMOTE THERMOSTAT WILL DISPLAY "HI". TO RETURN TO THE HEAT AUTO MODE, DEPRESS BOTH ARROWS A SECOND TIME.
HEAT MANUAL MODE:
1. PERFORM HEAT AUTO MODE STEPS 1 THROUGH 5.
2. SET MODE SELECTOR SWITCH IN THE HEAT MANUAL POSITION, OR DEPRESS BOTH ARROWS ON THE REMOTE THERMOSTAT IN UNISON.
SHUTDOWN:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION FOR TWO MINUTES.
2. SET MODE SELECTOR SWITCH IN THE OFF POSITION.
FUEL SCHEMATIC
LEGEND
SYM DESCRIPTION
B1 VENTILATION FAN MOTOR
B2 COMBUSTION AIR FAN MOTOR
CB1 CIRCUIT BREAKER, MAIN POWER
CB2 CIRCUIT BREAKER, THERMOSTAT
DS1 LIGHT, POWER (GREEN)
DS2 LIGHT, FLAMEOUT (FAILURE) (RED)
DS3 LIGHT, FLAMEOUT (RED)
E1 IGNITOR
F1 FUSE, 3A
G1 GROUND TERMINAL
JP3 REMOTE THERMOSTAT RECEPTACLE/PLUG
K1 COMBUSTION CONTROL RELAY
L1 HOURMETER, FUEL VALVE, MANUALLY OPEN
L2 SOLENOID PURGE VALVE, 3 WAY
L3 FLAMEOUT RESET SOLENOID
P1 IGNITION TRANSFORMER
S1 SWITCH, MODE SELECTOR
S2 SWITCH, TEMPERATURE LIMIT
S3 SWITCH, FUEL VALVE, MANUALLY OPEN
S4 SWITCH, AIR PURGE, MOMENTARY
S5 SWITCH, AIR PRESSURE
S6 FLAME DETECTOR
S7 FLAMEOUT RESET SWITCH
TB1 TERMINAL BOARD
T1 TRANSFORMER, IGNITION
TR1 TRANSFORMER, THERMOSTAT
TR2 TRANSFORMER, STEP-DOWN
FT 2,3 FUSE, 2A
V1 3-WAY VALVE, FUEL SELECTION
FUEL FILTER
FUEL PUMP
TO NOZZLE
200 PSIG
TO TB1-4
TO TB1-9
TB1-5
TB3-9
N.O.
COM
N.C.
PURGE LINE
EXTERNAL FUEL SUPPLY
INTERNAL FUEL TANK
120 VAC 50/60 HZ
LEAD ASSY 13229E8567
POWER "ON" LIGHT
IGNITION TRANSFORMER
VENT FAN MOTOR
PURGE VALVE SOLENOID
FLAMOUT RESET SOL/SW
COMBUSTOR AIR FAN MOTOR
COMBUSTION CONTROL RELAY
RECTIFIER/ TIME METER
HIGH TEMP LIMIT LIGHT
FUEL VALVE SOLENOID
FLAMEOUT LIGHT
RESET BUTTON
MANUAL 35°F TO 85°F
AUTO
S1 SET 150°F
S2 SET 200°F
S3
RED/ YEL
WHITE
ORANGE
BLACK
GRN
BLK
WHT
GND
OFF
VENT
HEAT AUTO
HEAT MANUAL

Figure 3. Operating Instructions and Electrical Schematic Plate.

WIRING DIAGRAMS - (CONTINUED)

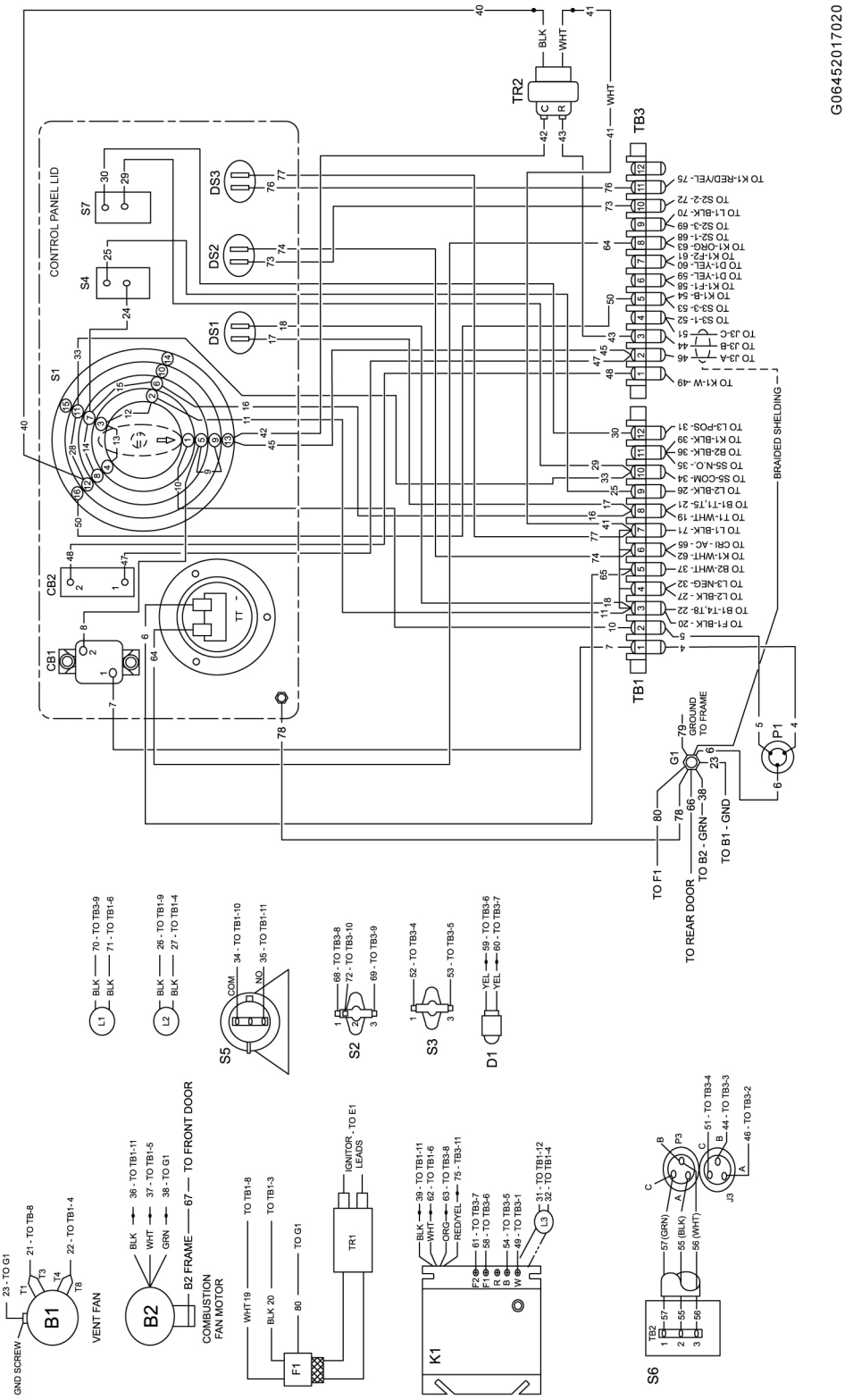


Figure 4. Wiring Diagram (Sheet 1 of 2).

WIRING DIAGRAMS - (CONTINUED)

WIRE ASSY INDEX #	FROM	TO	WIRE ASSY INDEX #	FROM	TO	WIRE ASSY INDEX #	FROM	TO
1	120 vac	J1-A	29	TB-10	S7-2	57	P3-C	TB2-1
2	Neutral	J1-B	30	S7-1	TB1-12	58	K1-F1	TB3-6
3	Ground	J1-C	31	TB1-12	L3POS	59	TB3-6	D1-YEL
4	P1-A	TB1-1	32	L3-NEG	TB1-4	60	D1-YEL	TB3-7
5	P1-B	TB1-2	33	S1-11	TB1-10	61	TB3-7	K1-F2
6	P1-C	G-1	34	TB1-10	S5-COM	62	K1-WHT	TB1-6
7	TB1-1	CB1-1	35	S5-N.O.	TB1-11	63	K1-ORG	TB3-8
8	CB-2	S1-5	36	TB1-11	B2-BLK	64	TB3-8	TT
9	S1-5	S1-9	37	B2-WHT	TB1-5	65	TT	TB1-6
10	TB1-2	S1-1	38	B2-GRN/YEL	G1	66	G-1	Door, Rear
11	S1-2	TB1-3	39	TB1-11	K1-BLK	67	B-2,Frame	Door, Front
12	S1-2	S1-3	40	S1-12	TR2-BLK	68	TB3-8	S2-1
13	S1-3	S1-4	41	TR2-WHT	TB1-7	69	S2-3	TB3-9
14	S1-8	S1-7	42	S1-13	TR2-C	70	TB3-9	L1-BLK
15	S1-7	S1-6	43	TR2-R	TB3-3	71	L1-BLK	TB1-7
16	S1-6	TB1-8	44	TB3-3	J3-B	72	S2-2	TR3-10
17	TB1-8	DS1-POS	45	S1-13	TB3-2	73	TB3-10	DS2-POS
18	DS1-NEG	TB1-3	46	TB3-2	J3-A	74	DS2-NEG	TB1-6
19	BB1-8	F1-BLK	47	TB3-2	CB2-1	75	K1-RED/YEL	TB3-11
20	F1-WHT	TB1-3	48	CB2-2	TB3-1	76	TB3-11	DS3-POS
21	TB1-8	B-T1,T5	49	TB3-1	K1-W	77	DS3-NEG	TB1-7
22	B1-T4,T8	TB1-3	50	S1-16	TB3-5	78	G1	C.P.-LID
23	B1,GRD	G1	51	TB3-4	J3-C	79	G1	FRAME
24	S1-7	S4-2	52	TB3-4	S3-1	80	F1	G1
25	S4-1	TB1-9	53	S3-3	TB3-5			
26	TB1-9	L2-BLK	54	TB3-5	K1-B			
27	L2-BLK	TB1-4	55	P3-A	TB2-2			
28	S1-12	S1-11	56	P3-B	TB2-3			

G06452017030

LEGEND	
SYM	DESCRIPTION
B1	VENTILATION FAN MOTOR
B2	COMBUSTION AIR FAN MOTOR
CB1	CIRCUIT BREAKER, MAIN POWER
CB2	CIRCUIT BREAKER, THERMOSTAT
D1	FLAME SENSOR
DS1	LIGHT, POWER (GREEN)
DS2	LIGHT, HIGH TEMPERATURE (RED)
DS3	LIGHT, FLAMEOUT (RED)
E1	IGNITER
F1	FILTER
G1	GROUND TERMINAL
JP3	REMOTE THERMOSTAT RECEPTACLE PLUG
K1	COMBUSTION CONTROL RELAY
L1	SOLENOID FUEL VALVE, NORMALLY OPEN
L2	SOLENOID PURGE VALVE, 3 WAY
L3	FLAMOUT RESET SOLENOID
P1	MAIN POWER PLUG
S1	SWITCH, MODE SELECTOR
S2	SWITCH, TEMPERATURE LIMIT
S3	DISCHARGE AIR THERMOSTAT
S4	SWITCH, AIR PURGE, MOMENTARY
S5	SWITCH, AIR PRESSURE
S6	REMOTE THERMOSTAT
S7	FLAMEOUT RESET SWITCH
TR1	TRANSFORMER, IGNITION
TR2	TRANSFORMER, THERMOSTAT
TB1,2,3	TERMINAL STRIP
TT	HOURMETER

Figure 4. Wiring Diagram (Sheet 2 of 2).

WIRING DIAGRAMS - (CONTINUED)

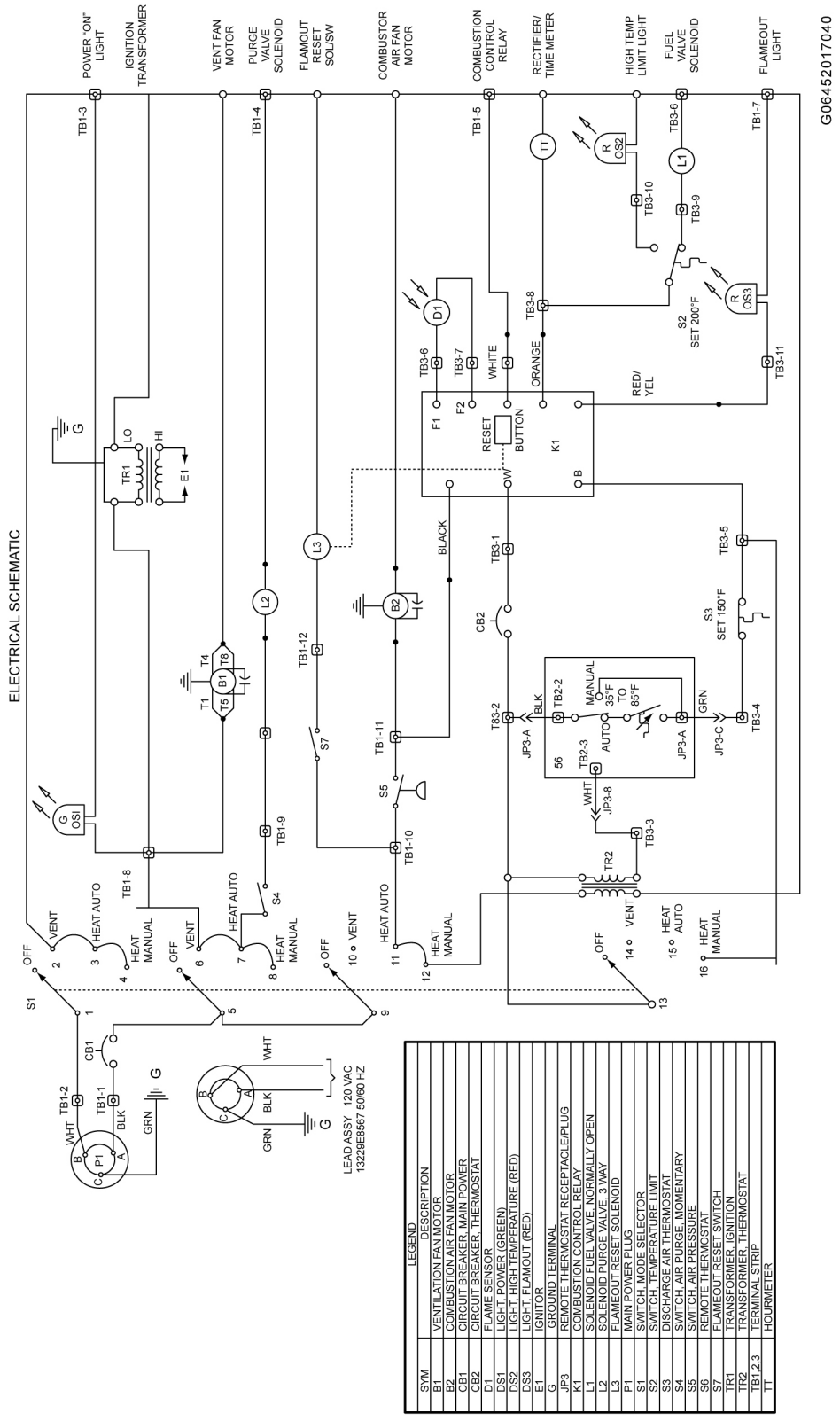


Figure 5. ASH Electrical Schematic (without Filter, F1).

WIRING DIAGRAMS - (CONTINUED)

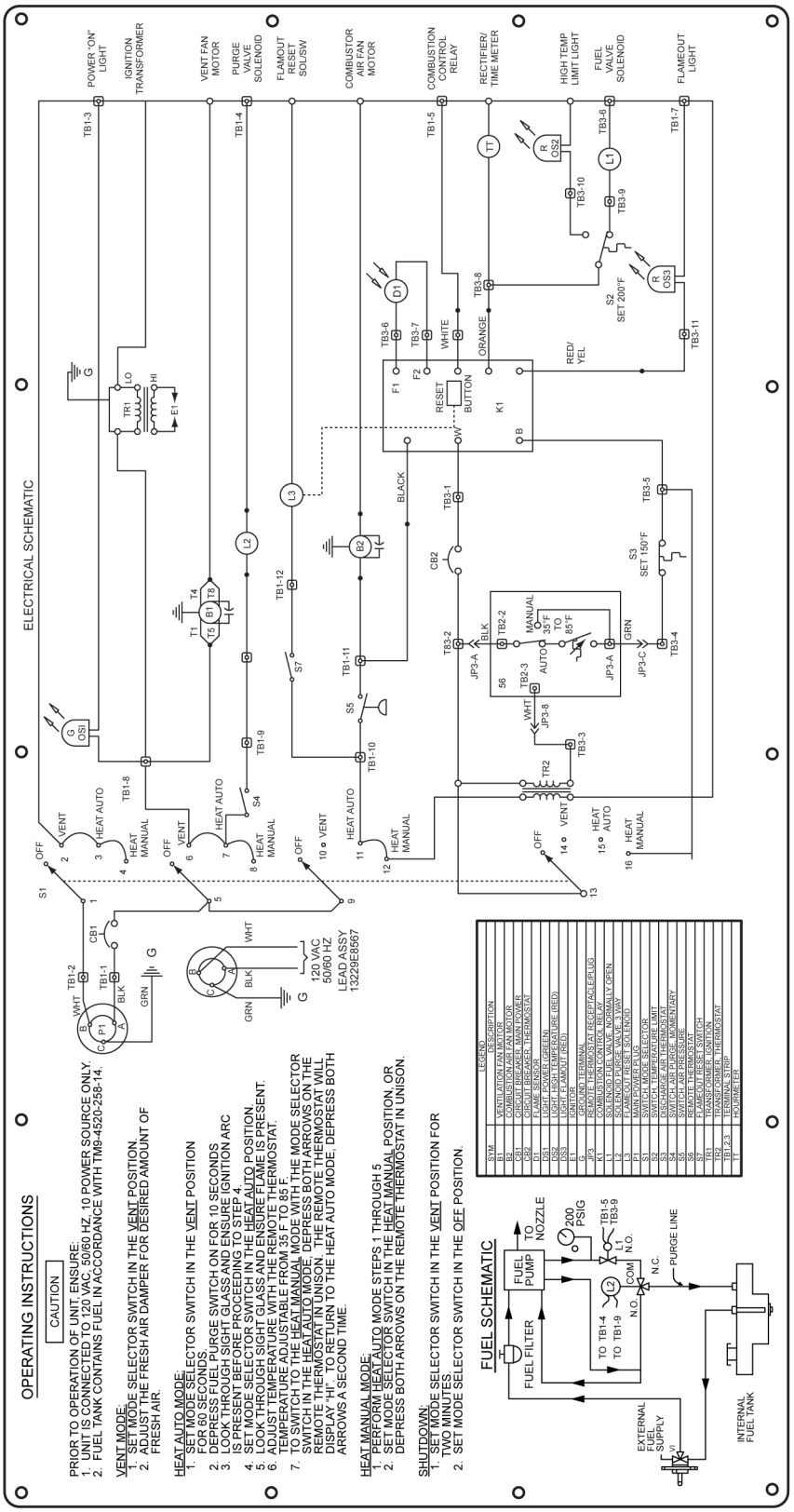

ELECTRICAL SCHEMATIC
G06452017050
OPERATING INSTRUCTIONS
CAUTION
PRIOR TO OPERATION OF UNIT, ENSURE:
1. UNIT IS CONNECTED TO 120 VAC, 50/60 HZ, 10 POWER SOURCE ONLY.
2. FUEL TANK CONTAINS FUEL IN ACCORDANCE WITH TM9-4520-258-14.
VENT MODE:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION.
2. ADJUST THE FRESH AIR DAMPER FOR DESIRED AMOUNT OF FRESH AIR.
HEAT AUTO MODE:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION FOR 60 SECONDS.
2. DEPRESS FUEL PURGE SWITCH ON FOR 10 SECONDS.
3. LOOK THROUGH SIGHT GLASS AND ENSURE IGNITION ARC IS PRESENT. RESET SWITCH IF NECESSARY.
4. SET MODE SELECTOR SWITCH IN THE HEAT AUTO POSITION.
5. LOOK THROUGH SIGHT GLASS AND ENSURE FLAME IS PRESENT.
6. ADJUST TEMPERATURE WITH THE REMOTE THERMOSTAT.
7. TO SWITCH TO THE HEAT MANUAL MODE WITH THE MODE SELECTOR SWITCH IN THE HEAT AUTO MODE, DEPRESS BOTH ARROWS ON THE REMOTE THERMOSTAT IN UNISON. THE REMOTE THERMOSTAT WILL DISPLAY "HI". TO RETURN TO THE HEAT AUTO MODE, DEPRESS BOTH ARROWS A SECOND TIME.
HEAT MANUAL MODE:
1. PERFORM HEAT AUTO MODE STEPS 1 THROUGH 5
2. SET MODE SELECTOR SWITCH IN THE HEAT MANUAL POSITION, OR DEPRESS BOTH ARROWS ON THE REMOTE THERMOSTAT IN UNISON.
SHUTDOWN:
1. SET MODE SELECTOR SWITCH IN THE VENT POSITION FOR TWO MINUTES.
2. SET MODE SELECTOR SWITCH IN THE OFF POSITION.
FUEL SCHEMATIC
FUEL PUMP
FUEL FILTER
TO NOZZLE
200 PSIG
TO TB1-4
TO TB1-9
TB1-5
TB3-9
L1
L2
N.O.
COM
N.C.
PURGE LINE
EXTERNAL FUEL SUPPLY
INTERNAL FUEL TANK
LEGEND
SYM DESCRIPTION
B1 VENTILATION FAN MOTOR
B2 COMBUSTION AIR MOTOR
CB1 CIRCUIT BREAKER, MAIN POWER
CB2 CIRCUIT BREAKER, THERMOSTAT
DS1 FLAME SENSOR
DS2 LIGHT, POWER (GREEN)
DS3 LIGHT, HIGH TEMPERATURE (RED)
E1 IGNITOR (SMOUT (RED)
G GROUND TERMINAL
JP3 REMOTE THERMOSTAT RECEPTACLE
K1 COMBUSTION CONTROL RELAY
L1 SOLENOID FUEL VALVE, NORMALLY OPEN
L2 SOLENOID PURGE VALVE, 3 WAY
L3 FLAME OUT RESET SOLENOID
P1 MAIN POWER PLUG
S1 SWITCH, MODE SELECTOR
S2 SWITCH, HIGH TEMP LIMIT
S3 DISCHARGE AIR THERMOSTAT
S4 SWITCH, AIR PURGE, MOMENTARY
S5 REMOTE THERMOSTAT
S6 REMOTE THERMOSTAT
S7 FLAMEOUT RESET SWITCH
TR1 TRANSFORMER, IGNITION
TR2 TRANSFORMER, THERMOSTAT
TB1,2,3 TERMINAL STRIP
TT HOURMETER
120 VAC 50/60 HZ LEAD ASSY 13229E0567
POWER "ON" LIGHT
IGNITION TRANSFORMER
VENT FAN MOTOR
PURGE VALVE SOLENOID
FLAMOUT RESET SOL/SW
COMBUSTOR AIR FAN MOTOR
COMBUSTION CONTROL RELAY
RECTIFIER/ TIME METER
HIGH TEMP LIMIT LIGHT
FUEL VALVE SOLENOID
FLAMEOUT LIGHT
RESET BUTTON
MANUAL 35°F TO 85°F
AUTO
SET 200°F
SET 150°F
RED/ YEL
WHITE
ORANGE
BLACK
WHT
BLK
GRN

Figure 6. Operating Instructions and Electrical Schematic Plate (without Filter F1).

WIRING DIAGRAMS - (CONTINUED)

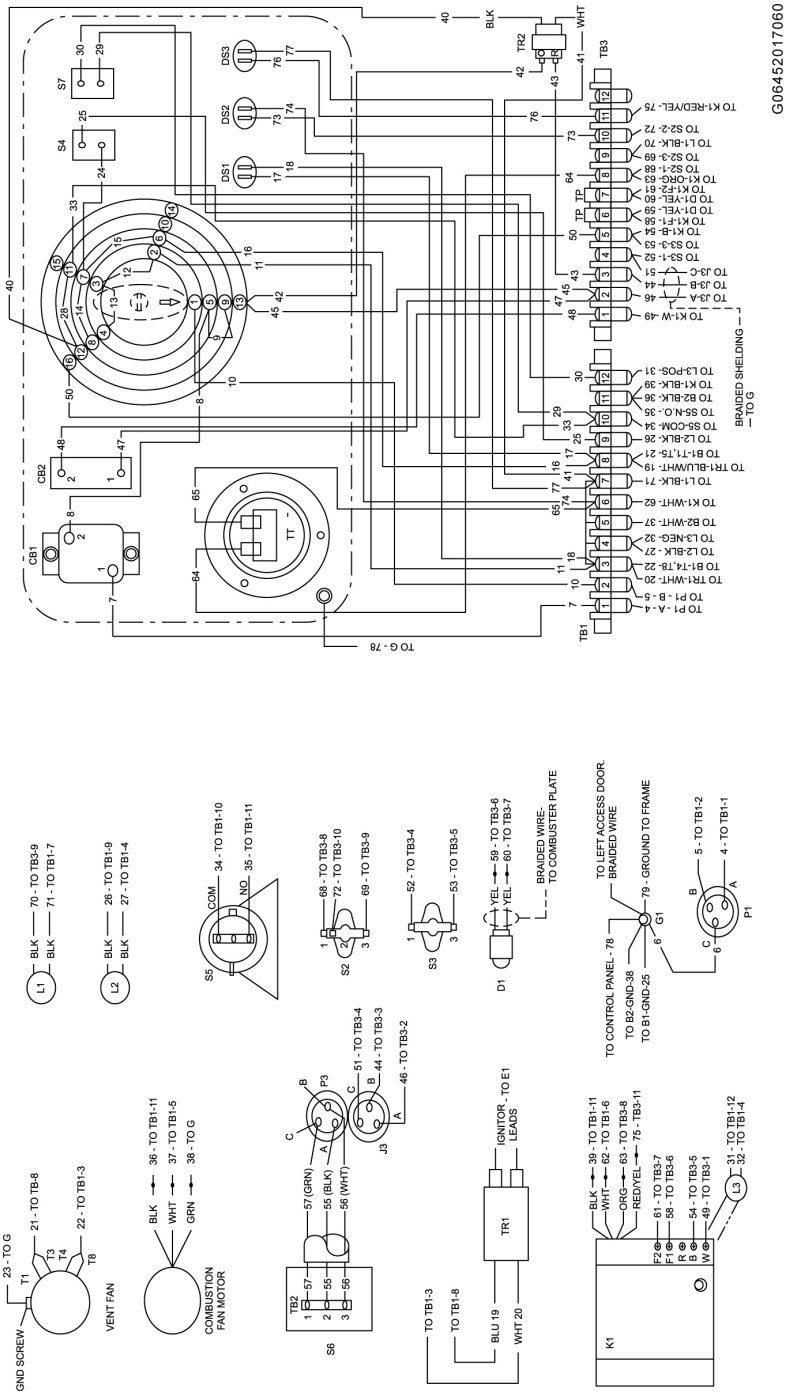


Figure 7. Wiring Diagram (without Filter F1) (Sheet 1 of 2).

WIRING DIAGRAMS - (CONTINUED)

WIRE ASSY INDEX #	FROM	TO	WIRE ASSY INDEX #	FROM	TO	WIRE ASSY INDEX #	FROM	TO
1	120 vac	J1-A	29	TB1-10	S7-2	57	P3-C	TB2-1
2	Neutral	J1-B	30	S7-1	TB1-12	58	K1-F1	TB3-6
3	Ground	J1-C	31	TB1-12	L3-POS	59	TB3-6	D1-YEL
4	P1-A	TB1-1	32	L3-NEG	TB1-4	60	D1-YEL	TB3-7
5	P1-B	TB1-2	33	S1-11	TB1-10	61	TB3-7	K1-F2
6	P1-C	G	34	TB1-10	S5-COM	62	K1-WHT	TB1-6
7	TB1-1	CB1-1	35	S5-N.O.	TB1-11	63	K1-ORG	TB3-8
8	CB-2	S1-5	36	TB1-11	B2-BLK	64	TB3-8	TT
9	S1-5	S1-9	37	B2-WHT	TB1-5	65	TT	TB1-6
10	TB1-2	S1-1	38	B2-GRN/YEL	G	66		
11	S1-2	TB1-3	39	TB1-11	K1-BLK	67		
12	S1-2	S1-3	40	S1-12	TR2-BLK	68	TB3-8	S2-1
13	S1-3	S1-4	41	TR2-WHT	TB1-7	69	S2-3	TB3-9
14	S1-8	S1-7	42	S1-13	TR2-C	70	TB3-9	L1-BLK
15	S1-7	S1-6	43	TR2-R	TB3-3	71	L1-BLK	TB1-7
16	S1-6	TB1-8	44	TB3-3	J3-B	72	S2-2	TB3-10
17	TB1-8	DS1-POS	45	S1-13	TB3-2	73	TB3-10	DS2-POS
18	DS1-NEG	TB1-3	46	TB3-2	J3-A	74	DS2-NEG	TB1-6
19	TB1-8	TR1-BLU	47	TB3-2	CB2-1	75	K1-RED/YEL	TB3-11
20	TR1-WHT	TB1-3	48	CB2-2	TB3-1	76	TB3-11	DS3-POS
21	TB1-8	B-T1,T5	49	TB3-1	K1-W	77	DS3-NEG	TB1-7
22	B1-T4,T8	TB1-3	50	S1-16	TB3-5	78	G	C.P.-LID
23	B1-GRD	G	51	TB3-4	J3-C	79	G	FRAME
24	S1-7	S4-2	52	TB3-4	S3-1	80		
25	S4-1	TB1-9	53	S3-3	TB3-5	81		
26	TB1-9	L2-BLK	54	TB3-5	K1-B	82	TR1-G	GND-T
27	L2-BLK	TB1-4	55	P3-A	TB2-2			
28	S1-12	S1-11	56	P3-B	TB2-3			

LEGEND	
SYM	DESCRIPTION
B1	VENTILATION FAN MOTOR
B2	COMBUSTION AIR FAN MOTOR
CB1	CIRCUIT BREAKER, MAIN POWER
CB2	CIRCUIT BREAKER, THERMOSTAT
D1	FLAME SENSOR
DS1	LIGHT, POWER (GREEN)
DS2	LIGHT, HIGH TEMPERATURE (RED)
DS3	LIGHT, FLAMEOUT (RED)
E1	IGNITER
G	GROUND TERMINAL
JP3	REMOTE THERMOSTAT RECEPTACLE PLUG
K1	COMBUSTION CONTROL RELAY
L1	SOLENOID FUEL VALVE, NORMALLY OPEN
L2	SOLENOID PURGE VALVE, 3 WAY
L3	FLAMOUT RESET SOLENOID
P1	MAIN POWER PLUG
S1	SWITCH, MODE SELECTOR
S2	SWITCH, TEMPERATURE LIMIT
S3	DISCHARGE AIR THERMOSTAT
S4	SWITCH, AIR PURGE, MOMENTARY
S5	SWITCH, AIR PRESSURE
S6	REMOTE THERMOSTAT
S7	FLAMEOUT RESET SWITCH
TR1	TRANSFORMER, IGNITION
TR2	TRANSFORMER, THERMOSTAT
TB1,2,3	TERMINAL STRIP
TT	HOURMETER

G06452017070

WIRING DIAGRAMS - (CONTINUED)

Figure 7. Wiring Diagram (without Filter F1) (Sheet 2 of 2).

END OF WORK PACKAGE

CHAPTER 6

PARTS INFORMATION

FOR

ARMY SPACE HEATER H-120, H-120-1

FIELD MAINTENANCE

INTRODUCTION

SCOPE

The Repair Parts and Special Tools List (RPSTL) work package lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of operator and field maintenance of the Army Space Heater H-120 and H-120-1. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

GENERAL

In addition to the Introduction work package, this RPSTL is divided into the following work packages.

1. Repair Parts List Work Packages. Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed at the end of the individual work packages. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.
2. Special Tools List Work Packages. Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.
3. Cross-Reference Indexes Work Packages. There are two cross reference indexes work packages in this RPSTL: the National Stock Number (NSN) Index work package, and the Part Number (P/N) Index work package. The National Stock Number Index work package refers you to the figure and item number. The Part Number Index work package refers you to the figure and item number.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout. This entry may be subdivided into 4 subentries, one for each service.

Table 1. SMR Code Explanation.

SourceCodeXX	MaintenanceCodeXX	RecoverabilityCodeX	
1st two positions: How to get an item.	3rd position: Who can install, replace, or use the item.	4th position: Who can do complete repair* on the item.	5th position: Who determines disposition action on unserviceable items.

*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

INTRODUCTION - (CONTINUED)

Source Code	Application/Explanation
PA PB PC PD PE PF PG PH PR PZ	**NOTE** Items coded PC are subject to deterioration. Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the third position of the SMR code.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the third position of the SMR code. The complete kit must be requisitioned and applied.
MF-Made at field MH-Made at below depot/sustainment level ML-Made at SRA MD-Made at depot MG-Navy only	Items with these codes are not to be requisitioned/requested individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized to you by the third position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AF-Assembled by field AH-Assembled by below depot sustainment level AL-Assembled by SRA AD-Assembled by depot AG-Navy only	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the third position of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an "XA" coded item. Order the next higher assembly. (Refer to NOTE below.)
XB	If an item is not available from salvage, order it using the CAGEC and part number.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's part number.

INTRODUCTION - (CONTINUED)

Source Code	Application/Explanation
XD	Item is not stocked. Order an XD-coded item through local purchase or normal supply channels using the CAGEC and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes except for those items source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance:

Maintenance Code	Application/Explanation
F-	Field maintenance can remove, replace, and use the item.
H-	Below Depot Sustainment maintenance can remove, replace, and use the item.
L-	Specialized repair activity can remove, replace, and use the item.
G-	Afloat and ashore intermediate maintenance can remove, replace, and use the item (Navy only).
K-	Contractor facility can remove, replace, and use the item.
Z-	Item is not authorized to be removed, replaced, or used at any maintenance level.
D-	Depot can remove, replace, and use the item.

*NOTE - Army may use C in the third position. However, for joint service publications, Army will use O.

Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Maintenance Code	Application/Explanation
F-	Field is the lowest level that can do complete repair of the item.
H-	Below Depot Sustainment is the lowest level that can do complete repair of the item.
L-	Specialized repair activity (enter specialized repair activity or TASMG designator) is the lowest level that can do complete repair of the item.
D-	Depot is the lowest level that can do complete repair of the item.
G-	Both afloat and ashore intermediate levels are capable of complete repair of the item (Navy only).
K-	Complete repair is done at contractor facility.
Z-	Nonreparable. No repair is authorized.
B-	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

INTRODUCTION - (CONTINUED)

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z-	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
F-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the field level.
H-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the below depot sustainment level.
D-	Reparable item. When beyond lower level repair capability, return the item to depot. Condemnation and disposal of the item are not authorized below depot level.
L-	Reparable item. Condemnation and disposal are not authorized below Specialized Repair Activity (SRA).
A-	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.
G-	Field level reparable item. Condemn and dispose at either afloat or ashore intermediate levels. (Navy only)
K-	Reparable item. Condemnation and disposal to be performed at contractor facility.

NSN (Column (3)). The NSN for the item is listed in this column.

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a five-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number than the number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name, and when required, a minimum description to identify the item.
2. Part numbers of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.
3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.
4. The statement END OF FIGURE appears just below the last item description in Column 6 for a given figure in both the repair parts list and special tools list work packages.

QTY (Column (7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS

1. National Stock Number (NSN) Index Work Package. NSNs in this index are listed in National Item Identification Number (NIIN) sequence. STOCK NUMBER Column. This column lists the NSN in NIIN sequence. The NIIN consists of the last nine digits of the NSN. When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number. For example, if the NSN is 5385-01-574-1476, the NIIN is 01-574-1476.FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical

INTRODUCTION - (CONTINUED)

order in the repair parts list and special tools list work packages. ITEM Column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

2. Part Number (P/N) Index Work Package. Part numbers in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combinations which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order). PART NUMBER Column. Indicates the part number assigned to the item. FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list work packages. ITEM Column. The item number is the number assigned to the item as it appears in the “figure referenced in the adjacent figure number column.”

SPECIAL INFORMATION

UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as “UOC…” in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models.

Fabrication Instructions. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in .

Identification of the UOCs used in the RPSTL are shown in Table 2:

Table 2. Usable On Codes.

Code	Used On
LPL	Model H-1201
YKR	Model H-120

Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN/Part Number (P/N) Index work packages and the bulk material list in the repair parts list work package.

Illustrations List. The illustrations in this RPSTL contain field authorized items. Illustrations published in the applicable TM for the ASH for the below depot sustainment maintenance level RPSTL that contain field authorized items also appear in this RPSTL. The tabular list in the repair parts list work package contains only those parts coded “F” in the third position of the SMR code, therefore, there may be a break in the item number sequence.

HOW TO LOCATE REPAIR PARTS

1. When NSNs or Part Numbers Are Not Known. First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups. Second. Find the figure covering the functional group or the subfunctional group to which the item belongs. Third. Identify the item on the figure and note the number(s). Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.
2. When NSN is Known. First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN. Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.
3. When Part Number Is Known. First. If you have the part number and not the NSN, look in the PART NUMBER column of the part number index work package. Identify the figure and item number. Second. Look up the item on the figure in the applicable repair parts list work package.

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

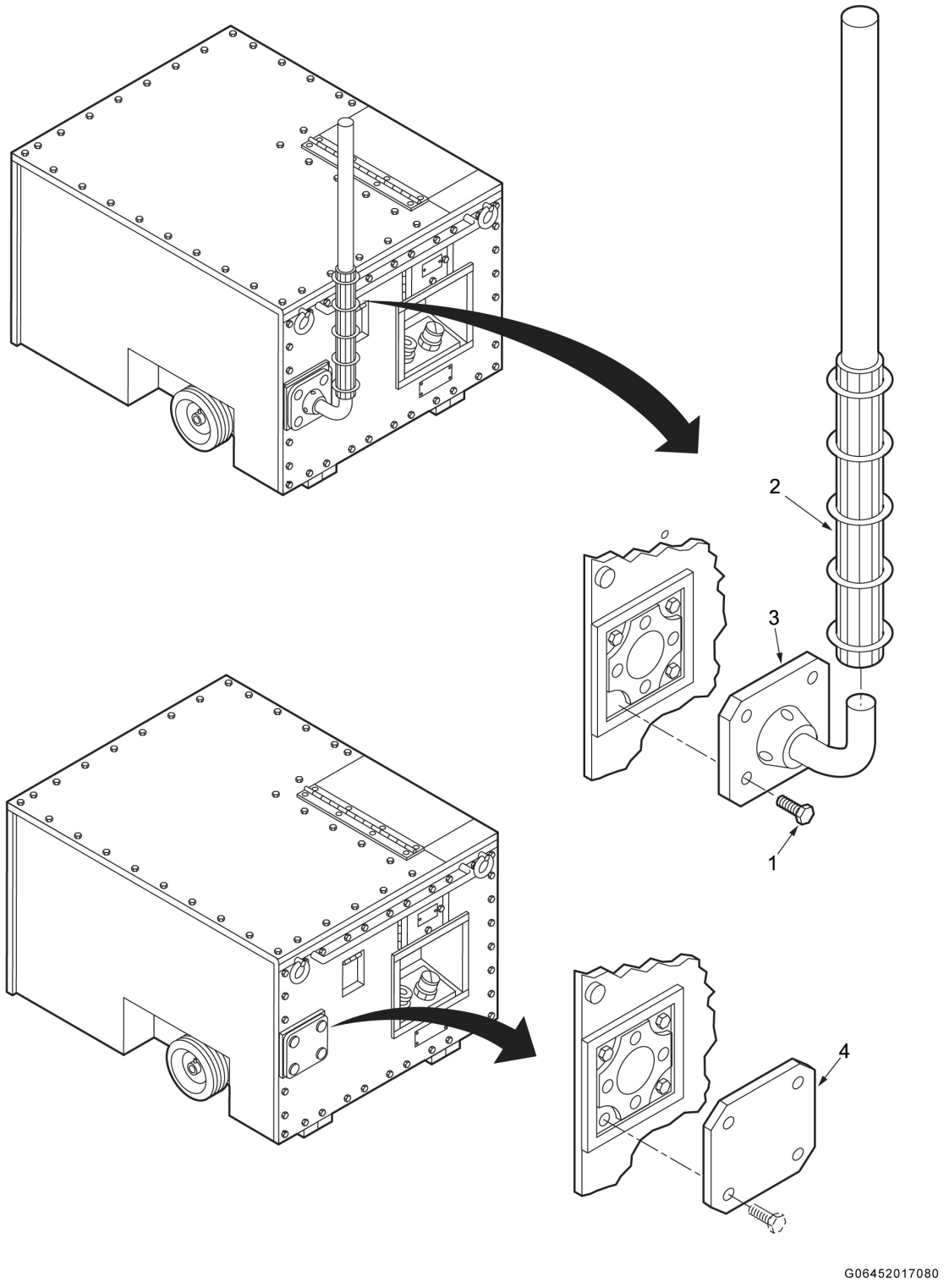


Figure 1. Exhaust Pipe and Elbow.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0101 EXHAUST PIPE AND ELBOW	
					FIGURE 1 Exhaust Pipe and Elbow.	
1	PAFZZ	5305-01-358-3743	96906	MS51849-139C	SCREW, MACHINE	4
2	PAFZZ	4520-01-399-0872	90598	60561-100	PIPE, EXHAUST	1
3	PAFZZ	4710-01-398-8361	5RQL2	60557-100	PIPE ASSEMBLY, METAL	1
4	XBFZZ		90598	60558-100	COVER, PROTECTIVE FOR SHIPPING AND STORAGE ONLY	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

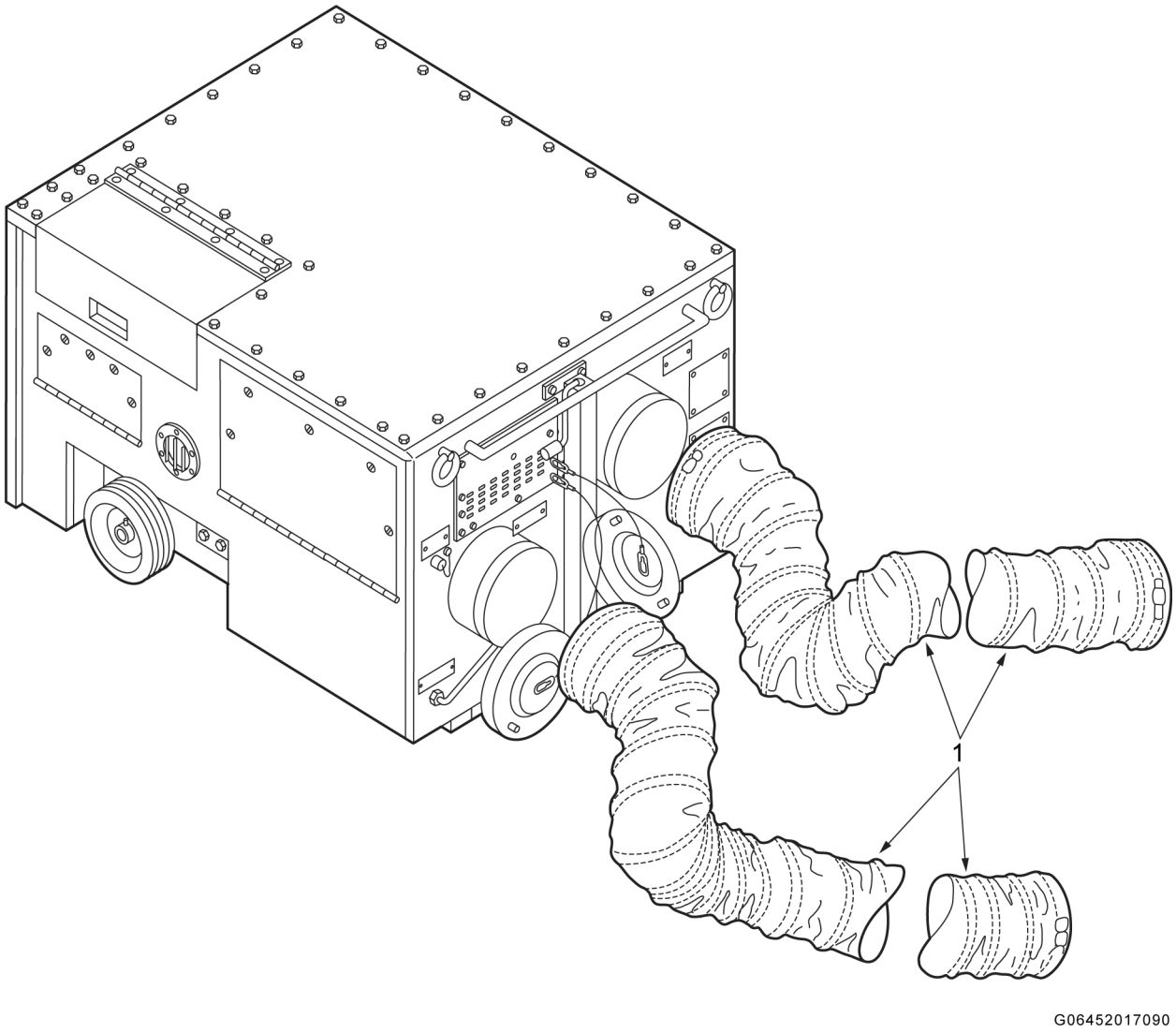


Figure 2. Flexible Air Ducts.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0102 FLEXIBLE AIR DUCTS FIGURE 2 Flexible Air Ducts.	
1	PAFZZ	4720-01-398-9929	81343	AS38386B2D015H	HOSE, AIR, DUCT	2
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

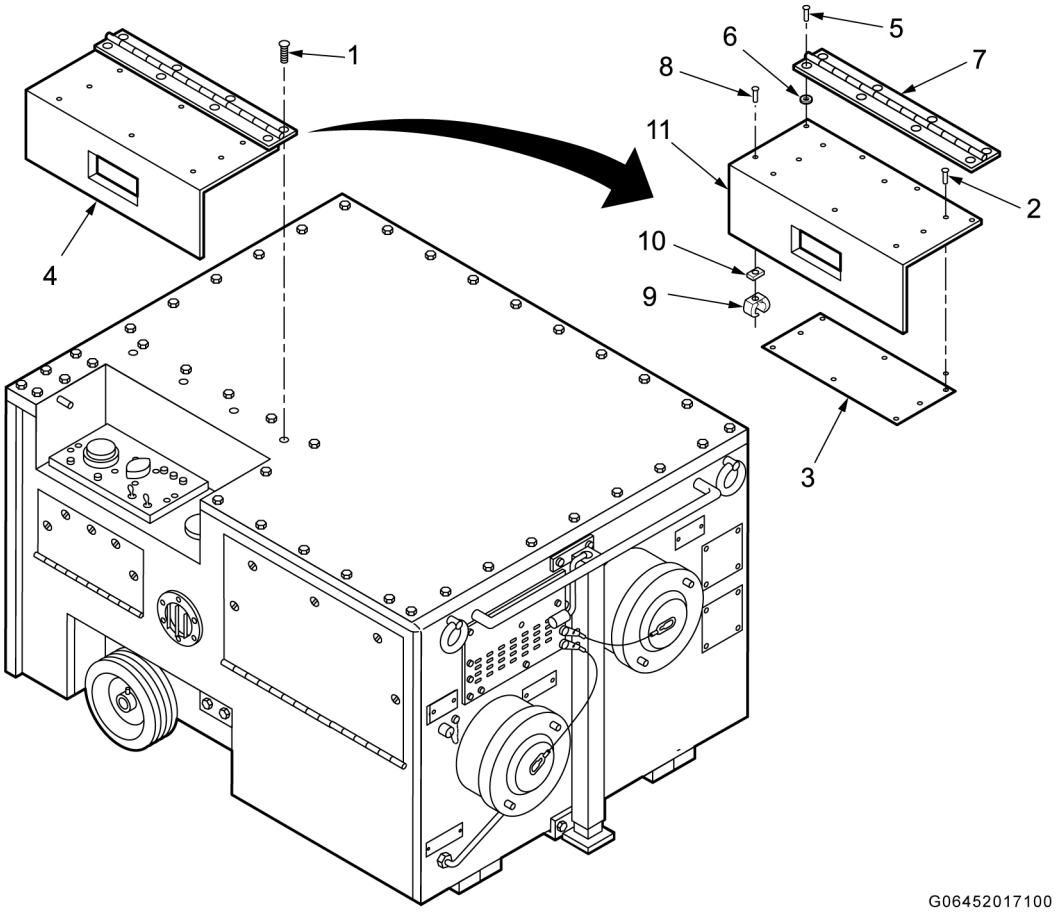


Figure 3. Control Box Cover Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0103 CONTROL BOX COVER ASSEMBLY	
					FIGURE 3 Control Box Cover Assembly.	
1	PAFZZ	5305-01-315-9067	96906	MS51479-1	SCREW, MACHINE	4
2	PBFZZ	5320-01-110-7954	06888	AD42AH	RIVET, BLIND	14
3	XBFZZ		90598	60429-1	PLATE, OPERATIONAL INSTRUCTIONS.....	1
					UOC: YKR	
3	XBFZZ		90598	60217-1	PLATE, OPERATIONAL INSTRUCTIONS.....	1
					UOC: LPL	
4	PAFFZ	5340-01-497-6707	5RQL2	60040-100	COVER, ACCESS	1
5	PAFZZ	5320-00-882-8388	81349	M24243/6A403H	.RIVET, BLIND	4
6	PFFZZ	5310-01-398-9656	07707	ABUP4	.WASHER, FLAT, BACKUP	4
7	MFFZZ		90598	60033-1	.HINGE, TOP COVER MAKE FROM P/N MS20257C3-4800,CAGEC 96906,CUT TO 20.5 INCHES.....	1
8	PFFZZ	5320-00-409-6841	81349	M24243/1-B606	.RIVET, BLIND	1
9	XDFZZ		90598	60076-1	.SPRING SLIP HOLDER	1
10	XBFZZ		90598	60078-1	.SPACER, SPRING CLIP	1
11	XBFZZ		90598	60034-1	.COVER, CONTROL BOX	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

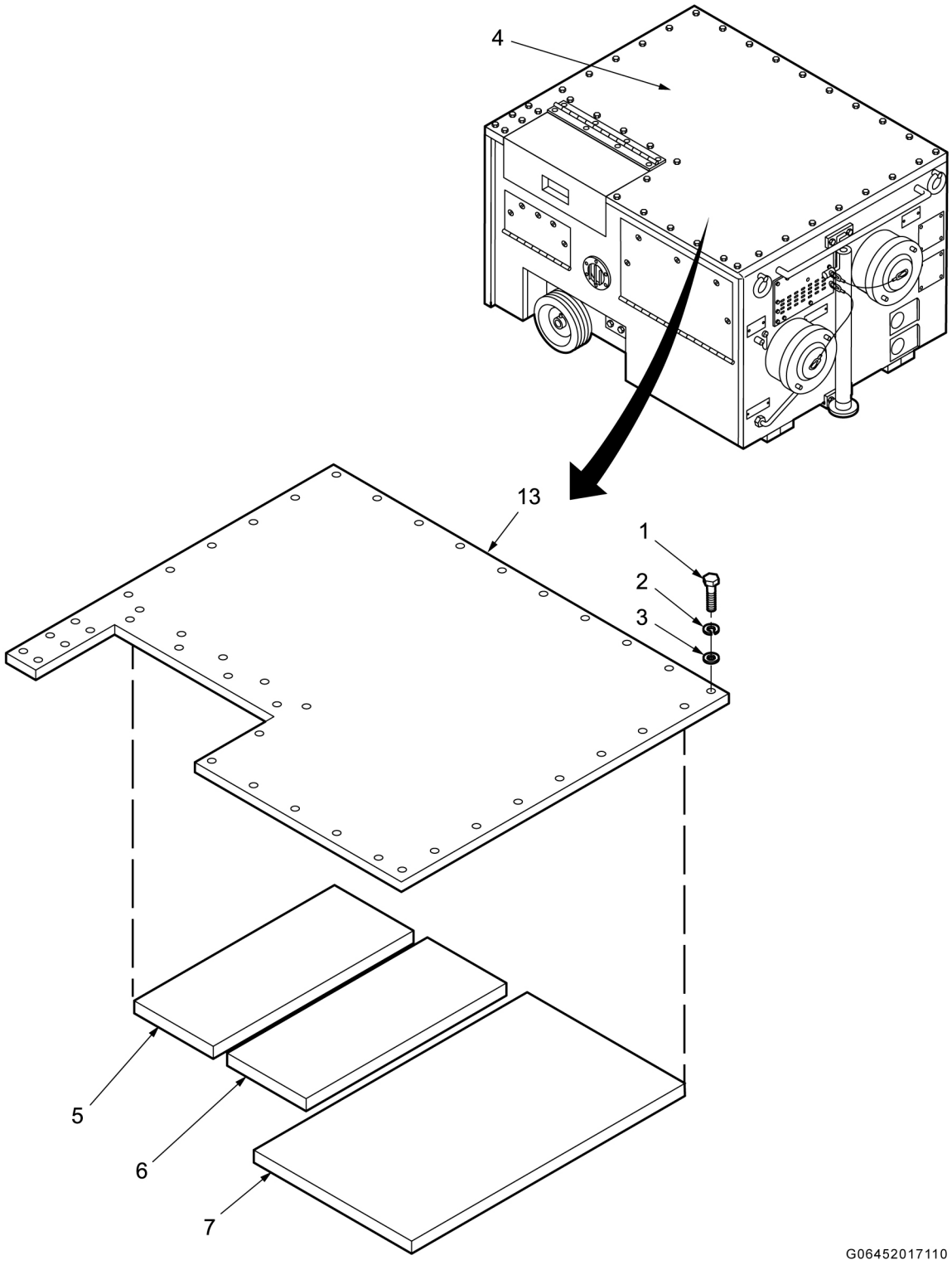


Figure 4. Top Panel Assembly (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

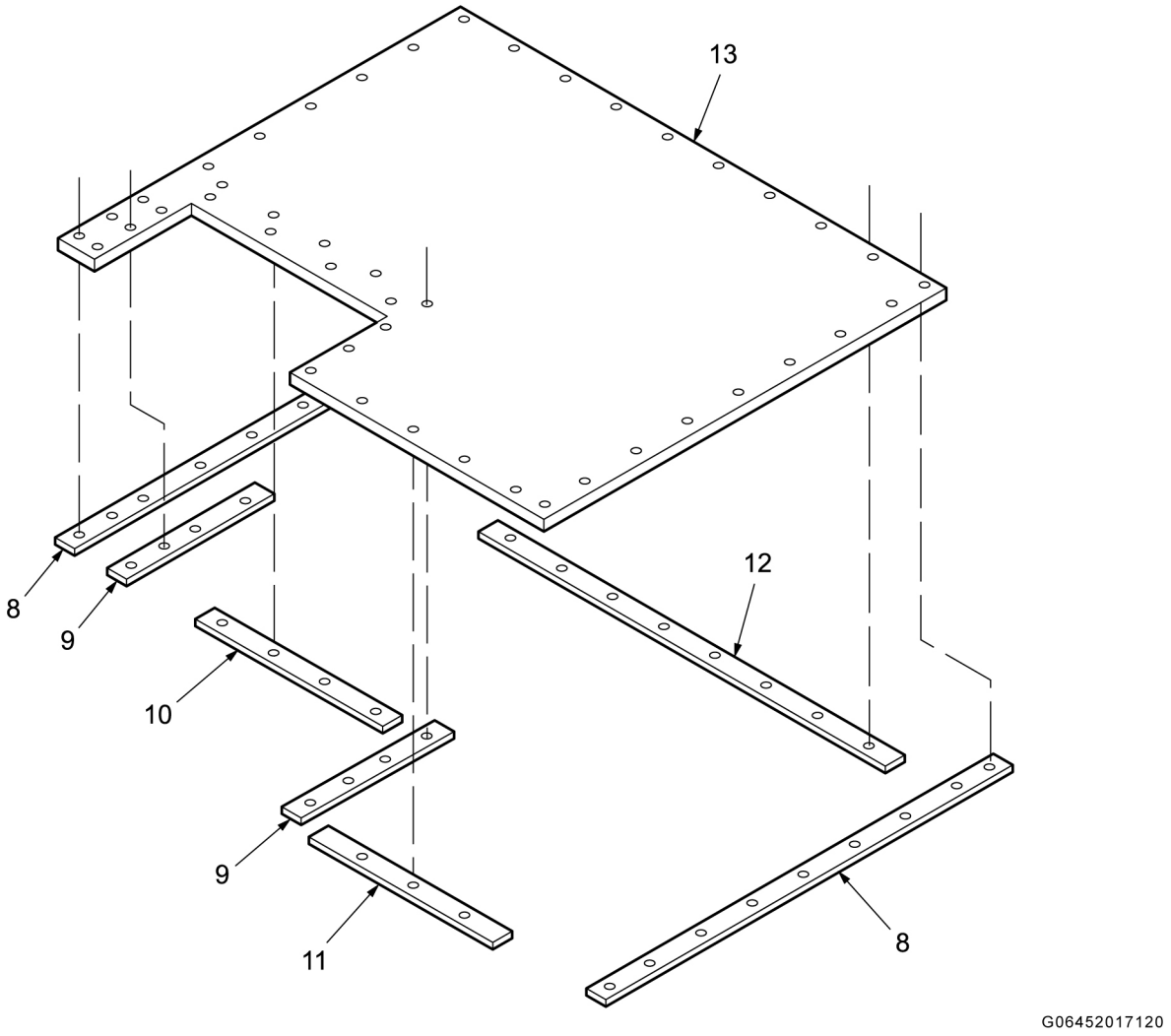


Figure 4. Top Panel Assembly (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0104 TOP PANEL ASSEMBLY FIGURE 4 Top Panel Assembly	
1	PAFZZ	5305-00-068-0508	07482	1C817P63	SCREW,CAP HEXAGON	38
2	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	38
3	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	38
4	XBFFF		90598	60032-100	PANEL, TOP ASSEMBLY	1
					UOC: YKR	
4	XBFFF		90598	60203-100	PANEL, TOP ASSEMBLY	1
					UOC: LPL	
5	MFFZZ		90598	60188-1	.INSULATION MAKE FROM P/N 08320116,CAGEC 2P653, CUT TO 9.50WX24.12L	1
6	MFFZZ		90598	60188-2	.INSULATION MAKE FROM P/N 08320116,CAGEC 2P653, CUT TO 9.50WX24.12L	1
7	MFFZZ		90598	60188-3	.INSULATION MAKE FROM P/N 08320116,CAGEC 2P653, CUT TO 22.68WX35.75L	1
8	MFFZZ		90598	60032-2	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX39.50L	2
					UOC: YKR	
8	MFFZZ		90598	60203-2	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX39.50L	2
					UOC: LPL	
8	MFFZZ		90598	60032-3	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX47.42L	2
					UOC: YKR	
8	MFFZZ		90598	60203-3	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX47.62L	2
					UOC: YKR	
9	MFFZZ		90598	60032-4	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX13.00L	2
					UOC: YKR	
9	MFFZZ		90598	60203-4	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX13.00L	2
					UOC: LPL	
10	MFFZZ		90598	60032-5	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX20.50L	1
					UOC: YKR	
10	MFFZZ		90598	60203-5	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX20.50L	1
					UOC: LPL	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
11	MFFZZ		90598	60032-6	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX24.12L	1
					UOC: YKR	
11	MFFZZ		90598	60203-6	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX24.12L	1
					UOC: LPL	
12	MFFZZ		90598	60032-3	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX47.42L	1
					UOC: YKR	
12	MFFZZ		90598	60203-3	.GASKET MAKE FROM P/N R411NPSA,CAGEC 86730, CUT TO 1.44WX47.62L	1
					UOC: LPL	
13	XBFZZ		90598	60032-1	.PANEL.....	1
					UOC: YKR	
13	XBFZZ		90598	60203-1	.PANEL.....	1
					UOC: LPL	
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

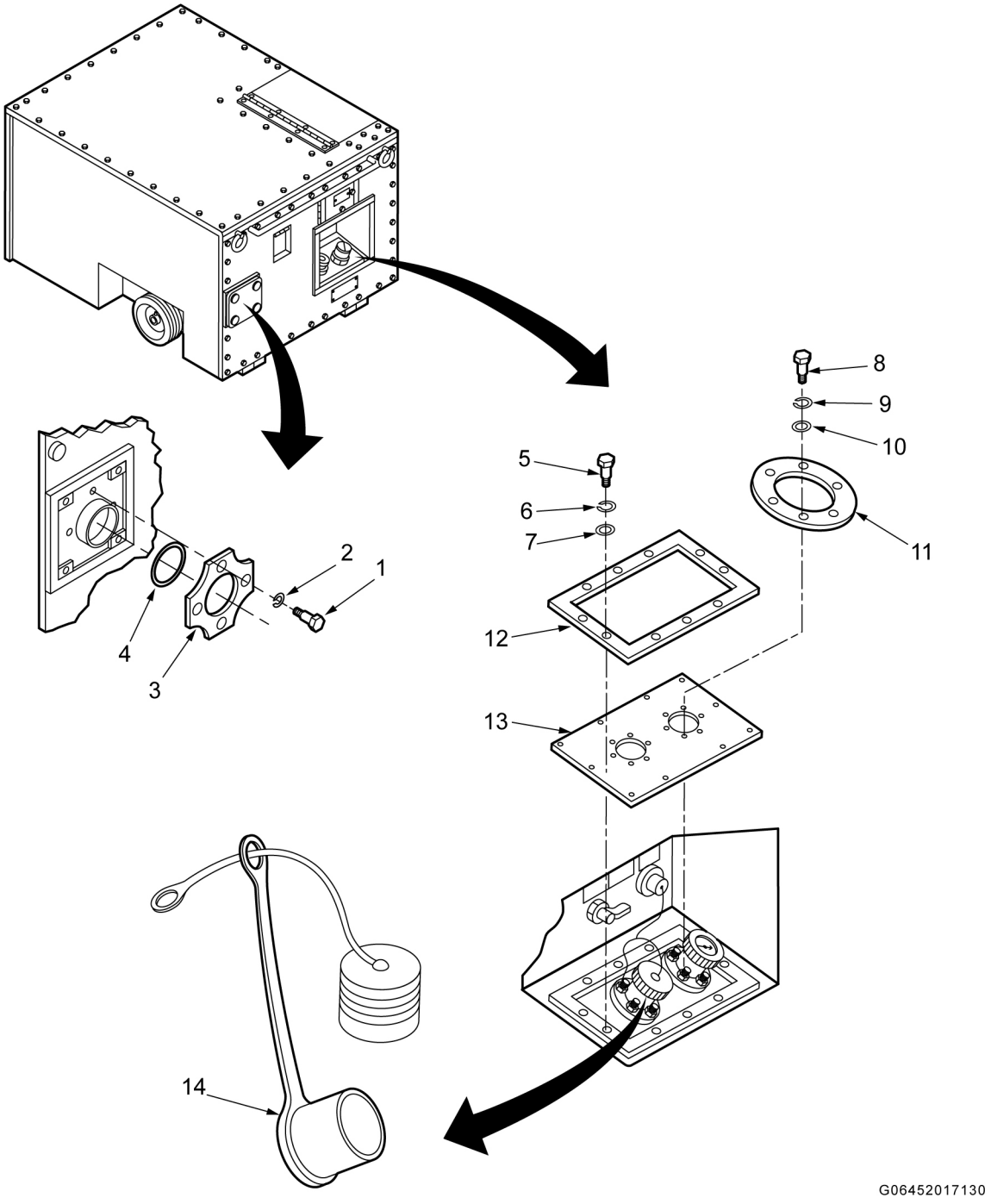


Figure 5. Rear Panel Assembly (Sheet 1 of 3).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

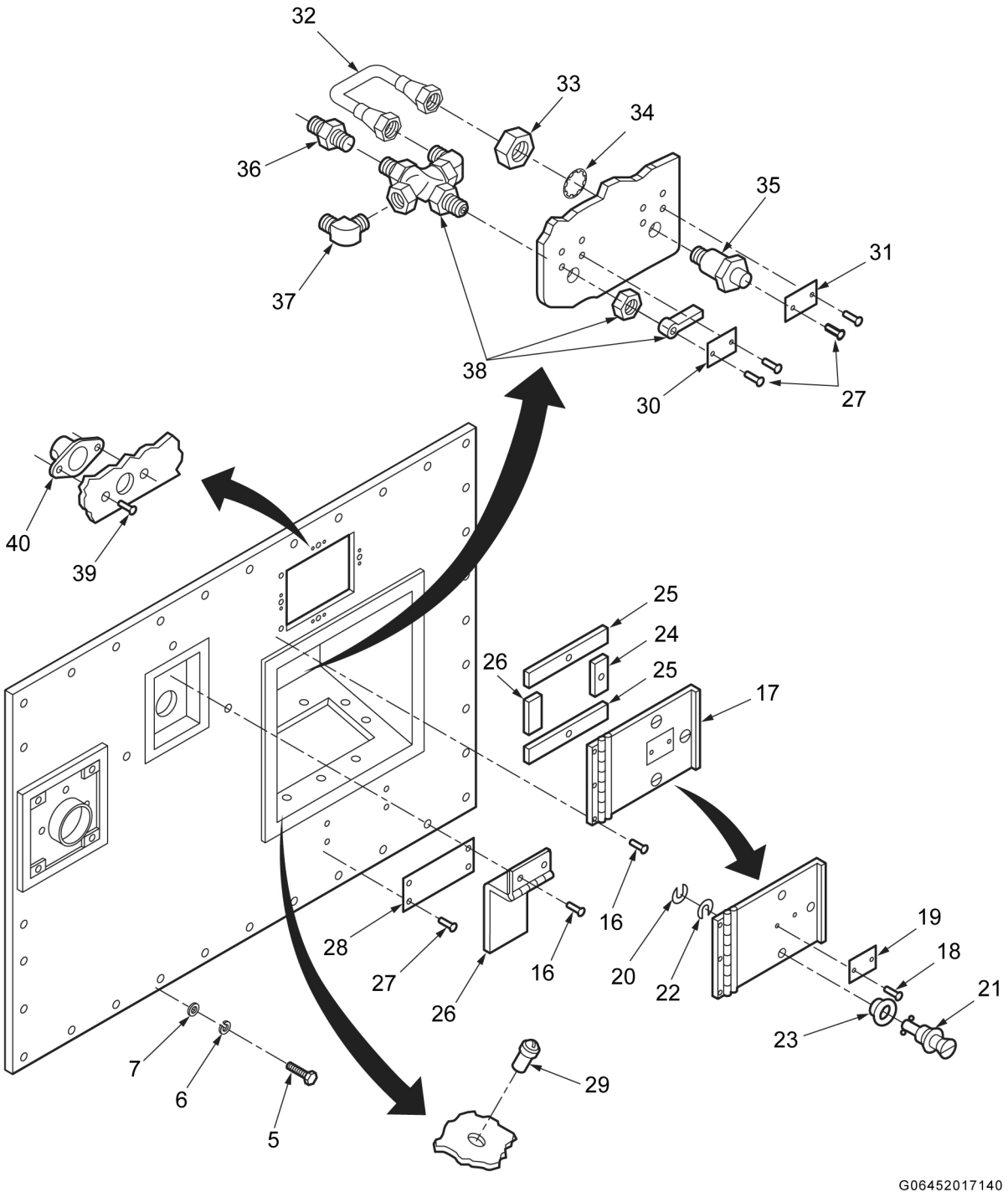


Figure 5. Rear Panel Assembly (Sheet 2 of 3).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

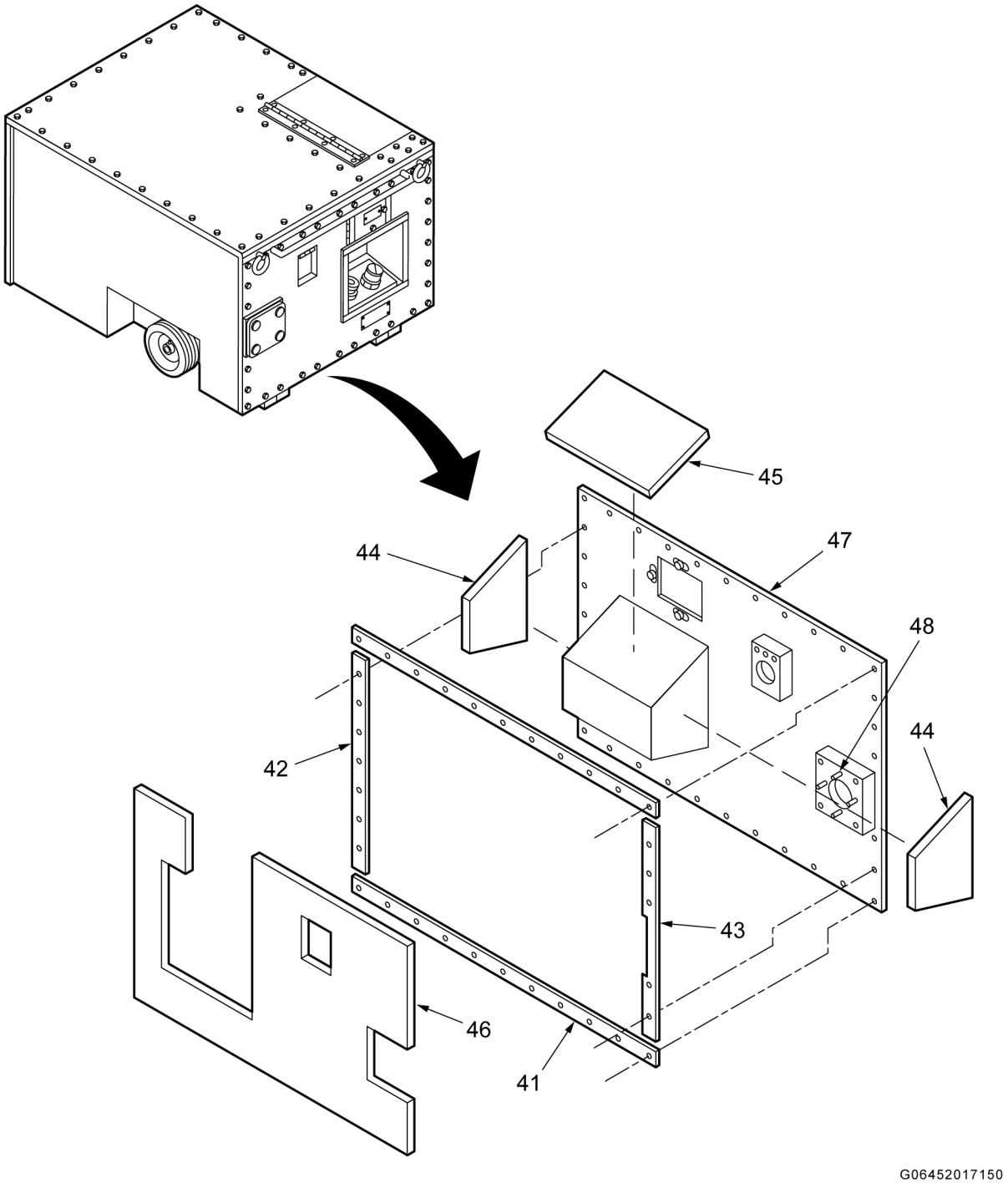


Figure 5. Rear Panel Assembly (Sheet 3 of 3).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0105 REAR PANEL ASSEMBLY	
					FIGURE 5 Rear Panel Assembly	
1	PAFZZ	5306-00-226-4825	80204	B1821BH031C075N	BOLT, MACHINE	4
2	PAFZZ	5310-00-974-6623	80205	MS35338-140	WASHER, LOCK	4
3	XBFZZ		90598	60564-1	PLATE, SEALING	1
4	MFFZZ		90598	60000-158	GASKET MAKE FROM P/N 0050D,CAGEC 17217, CUT TO 16 INCH LENGTH	1
5	PAFZZ	5305-00-068-0508	07482	1C817P63	SCREW, CAP, HEXAGON HEAD	43
6	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	43
7	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	43
8	PAFZZ	5310-00-852-8593	96906	MS35649-103	NUT, PLAIN HEXAGON	12
9	PAFZZ	5310-00-933-8120	80205	MS35338-138	WASHER, LOCK	12
10	PAFZZ	5310-00-619-1148	80205	MS15795-808	WASHER, FLAT	12
11	XBFZZ		90598	60494-1	RING, FILLER	2
12	XBFZZ		90598	60031-1	ISOLATOR, FRAME, FUEL	1
13	XBFZZ		90598	60022-1	ISOLATOR, FUEL TANK	1
14	PAFZZ	5340-01-307-4394	97111	H2-66M	PLUG, PROTECTIVE DUST	1
					UOC: YKR	
14	PBFZZ	5340-01-190-7979	78357	PDP-6	PLUG, PROTECTIVE DUST	1
					UOC: LPL	
15	XBFFF		90598	60638-100	PANEL ASSEMBLY, REAR	1
					UOC: YKR	
15	XBFFF		90598	60213-100	PANEL ASSEMBLY, REAR	1
					UOC: LPL	
16	PAFZZ	5320-00-956-7355	07707	AD64H	.RIVET, BLIND	5
17	XBFFF		90598	60628-100	.DOOR, ACCESS	1
					UOC: YKR	
17	XBFFF		90598	60220-100	.DOOR, ACCESS	1
					UOC: LPL	
18	PBFZZ	5320-01-110-7954	06888	AD42AH	..RIVET, BLIND	4
					UOC: YKR	
18	PBFZZ	5320-01-110-7954	06888	AD42AH	..RIVET, BLIND	2
					UOC: LPL	
19	XBFZZ		90598	60030-6	..PLATE, IDENTIFICATION	1
					UOC: YKR	
19	XBFZZ		90598	60202-6	..PLATE, IDENTIFICATION	1
					UOC: LPL	
20	PAFZZ	5310-00-984-0388	71286	4002-SW-SS	..WASHER, SPLIT	3
21	PAFZZ	5325-00-803-5773	71286	4002-8S	..STUD ASSEMBLY, TURNLOCK FASTENER	3
22	PAFZZ	5325-00-543-3388	71286	40G26-1	..RETAINING RING	3
23	PAFZZ	5325-00-646-8092	71286	4002-0S	..EYELET TURNLOCK FASTENER	3

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
24	MFFZZ		90598	60628-4	..GASKET MAKE FROM P/N R411NPSA, CAGEC 86730, CUT TO 1.00WX8.42L UOC: YKR	2
24	MFFZZ		90598	60220-4	..GASKET MAKE FROM P/N R411NPSA, CAGEC 86730, CUT TO 1.00WX8.42L UOC: LPL	2
25	MFFZZ		90598	60628-3	..GASKET MAKE FROM P/N R411NPSA, CAGEC 86730, CUT TO 1.00WX4.84L UOC: YKR	2
25	MFFZZ		90598	60220-3	..GASKET MAKE FROM P/N R411NPSA, CAGEC 86730, CUT TO 1.00WX4.84L UOC: LPL	1
26	XBFZZ		90598	60148-100	.HINGE ASSEMBLY	12
27	PAFZZ	5320-01-110-7954	06888	AD42AH	.RIVET, BLIND UOC: YKR	8
27	PAFZZ	5320-01-110-7954	06888	AD42AH	.RIVET, BLIND UOC: LPL	1
28	XBFZZ		90598	60030-1	.NAMEPLATE UOC: YKR	1
28	XBFZZ		90598	60202-1	.NAMEPLATE UOC: LPL	10
29	PAFZA	5310-00-620-4421	0VK23	S25KB151	.NUT PLAIN, BLIND RIVET	1
30	XBFZZ		90598	60030-7	.NAMEPLATE UOC: YKR	1
30	XBFZZ		90598	60202-7	.NAMEPLATE UOC: LPL	1
31	XBFZZ		90598	60030-5	.NAMEPLATE UOC: YKR	1
31	XBFZZ		90598	60202-5	.NAMEPLATE UOC: LPL	1
32	PFFZZ	4710-01-497-5103	90598	60489-100	.TUBE ASSEMBLY	1
33	PAFZZ	5310-00-638-2605	81343	AS5178D06	.NUT, PLAIN HEXAGON UOC: YKR	1
33	PAFZZ	5310-00-638-2605	81343	AS5178D06	.NUT, PLAIN HEXAGON UOC: LPL	1
34	PAFZZ	5310-00-939-1060	96906	MS35333-81	.WASHER, LOCK UOC: YKR	1
34	PAFZZ	5310-00-543-4385	96906	MS35333-46	.WASHER, LOCK UOC: LPL	1
35	PBFZZ	4730-01-317-8241	78357	A28-1N6-6-57	.COUPLING HALF, QUICK DISCONNECT	1
35	PFFZZ	4730-01-483-9874	78357	A484-3	.COUPLING HALF, QUICK DISCONNECT	1
36	PAFZA	4730-01-331-2049	01276	C5205X6	.ADAPTER, STRAIGHT PIPE TO TUBE	1
37	PAFZZ	4730-01-458-7779	96906	MS51504B6Z	.ELBOW, PIPE TO TUBE	2

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
38	PAFZZ	4820-01-280-3975	56173	700-4F4F4F-BT	.VALVE, BALL	1
39	PAFZZ	5320-00-882-8388	81349	M24243/6A403H	.RIVET, BLIND	6
40	PAFZZ	5325-01-480-8761	81205	BACR11AV3	.RECEPTACLE, TURNLOCK	3
41	MFFZZ		90598	60638-22	.GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX39.00L	2
					UOC: YKR	
41	MFFZZ		90598	60213-22	.GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX39.00	2
					UOC: LPL	
42	MFFZZ	5330-01-412-1879	90598	60638-23	.GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX24.50	1
					UOC: YKR	
42	MFFZZ		90598	60213-23	.GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX24.50	1
					UOC: LPL	
43	MFFZZ		90598	60638-24	.GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX24.50	1
					UOC: YKR	
43	MFFZZ		90598	60213-24	.GASKET MAKE FROM NSN: 5330-01-412-1879, CUT TO 1.50WX24.50	1
					UOC: LPL	
44	MFFZZ		90598	60179-1	.INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 8.50WX11.50 L	2
45	MFFZZ		90598	60140-21	.INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 8.75WX13.50 L	1
46	MFFZZ		90598	60169-1	.INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 24.50WX36.00 L	1
47	XBFZZ		90598	60640-100	.PANEL, WELDMENT REAR	1
					UOC: YKR	
47	XBFZZ		90598	60214-100	.PANEL, WELDMENT REAR	1
					UOC: LPL	
48	XDFZZ		03431	A31KB125	.RIVNUT	4
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

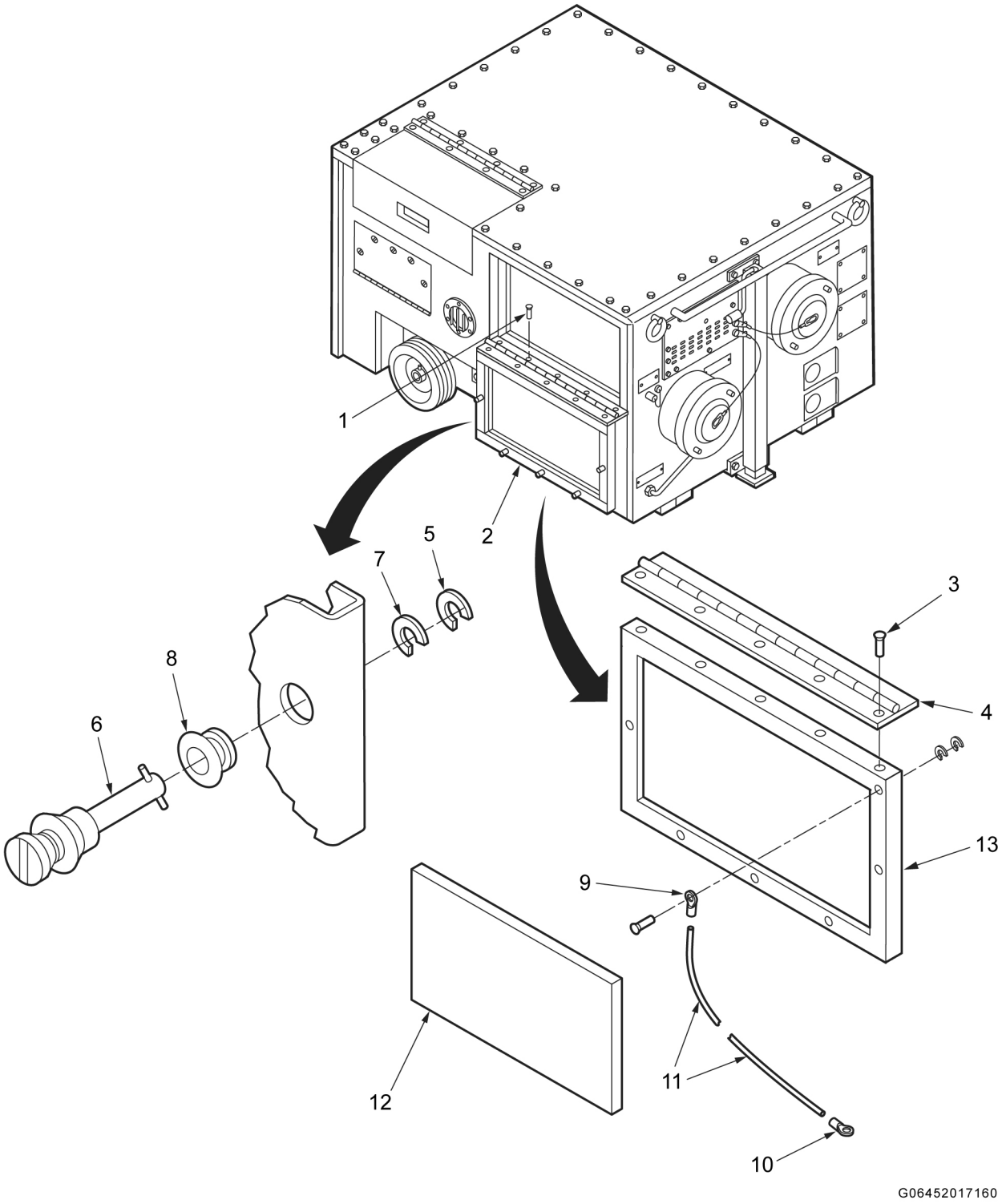


Figure 6. Front Side Door Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0106 FRONT SIDE DOOR ASSEMBLY	
					FIGURE 6 Front Side Door Assembly.	
1	PBFZZ	5320-00-140-4965	07707	AD64AH	RIVET, BLIND	5
2	XBFFF		90598	60619-100	DOOR ASSEMBLY, FRONT SIDE	1
3	PAFZZ	5320-00-956-7362	18876	10640709-1	.RIVET, BLIND	5
4	MFFZZ		90598	60617-1	.HINGE MAKE FROM P/N MS20257C3-4800,CAGEC 96906, CUT TO 21.50L.....	1
5	PAFZZ	5310-00-984-0388	71286	4002-SW-SS	.WASHER, SPLIT	5
6	PAFZA	5325-00-559-7849	71286	4002-28S	.STUD ASSEMBLY, TURNLOCK	5
7	PAFZZ	5325-00-543-3388	71286	40G26-1	.RING, RETAINING	5
8	PAFZZ	5325-00-646-8092	71286	4002-0S	.EYELET TURNLOCK FASTENER	5
9	PAFZZ	5940-00-143-4794	81343	MS25036-112	.TERMINAL, LUG	1
10	PAFZZ	5940-00-143-4777	00779	320569	.TERMINAL, LUG	1
11	MFFZZ		90598	60619-13	.BRAID, WIRE MAKE FROM P/N 8663,CAGEC 16428, CUT TO 13.70WX21.81L	1
12	MFFZZ		90598	60174-1	.INSULATION MAKE FROM P/N 08320116,CAGEC 2P653, CUT TO 13.70WX21.80L	1
13	XBFZZ		90598	60618-1	.PANEL	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

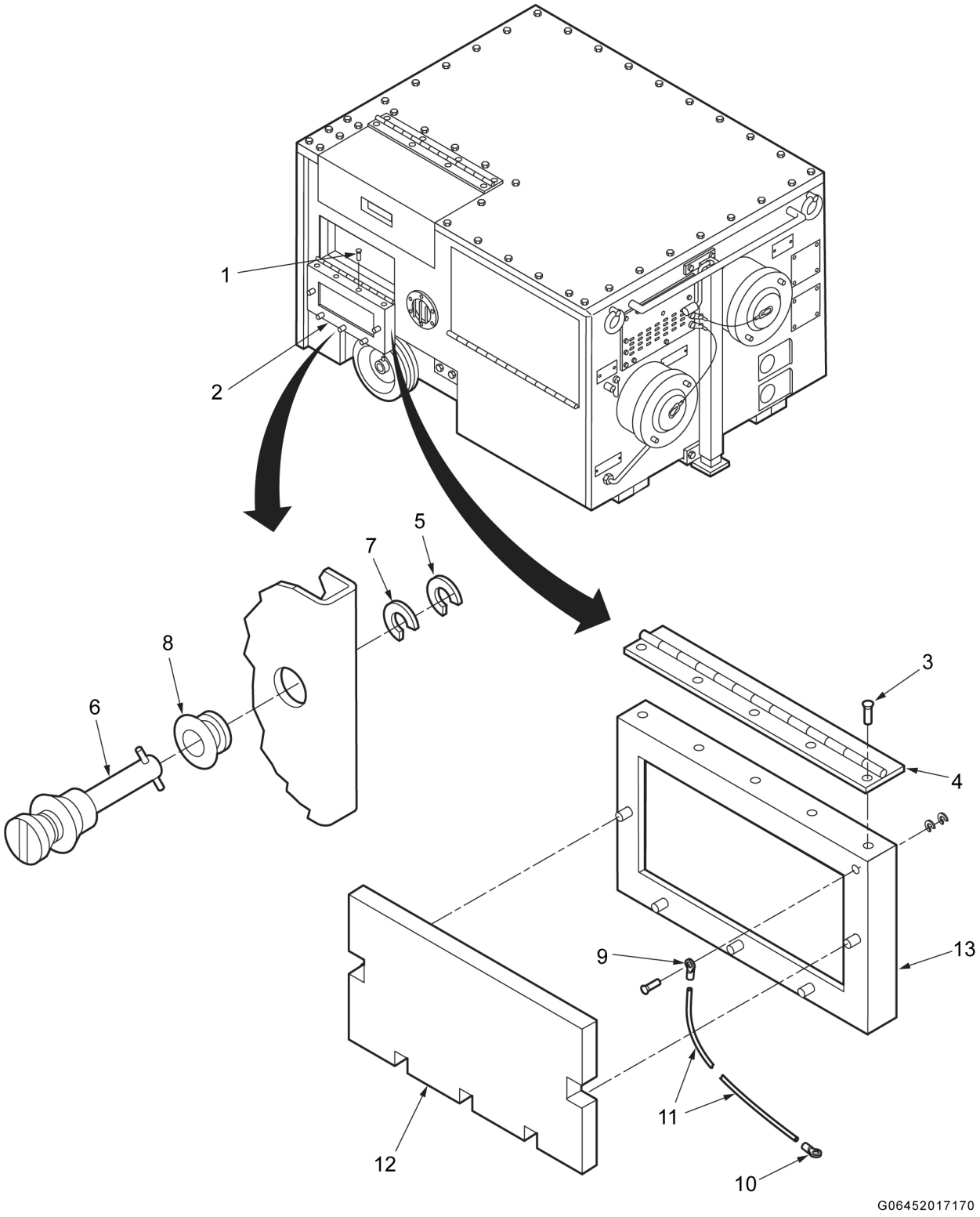


Figure 7. Rear Side Door Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0107 REAR SIDE DOOR ASSEMBLY	
					FIGURE 7 Rear Side Door Assembly.	
1	PBFZZ	5320-00-140-4965	07707	AD64AH	RIVET, BLIND	4
2	XBFFF		90598	60627-100	DOOR ASSEMBLY, REAR SIDE	1
3	PAFZZ	5320-00-956-7362	18876	10640709-1	.RIVET, BLIND	4
4	MFFZZ		90598	60625-1	.HINGE MAKE FROM P/N MS20257C3-4800,CAGEC 96906, CUT TO 15.50L.....	1
5	PAFZZ	5310-00-984-0388	71286	4002-SW-SS	.WASHER, SPLIT	5
6	PAFZA	5325-00-559-7849	71286	4002-28S	.STUD ASSEMBLY, TURNLOCK	5
7	PAFZZ	5325-00-543-3388	71286	40G26-1	.RING, RETAINING	5
8	PAFZZ	5325-00-646-8092	71286	4002-0S	.EYELET TURNLOCK FASTENER	5
9	PAFZZ	5940-00-143-4794	81343	MS25036-112	.TERMINAL, LUG	1
10	PAFZZ	5940-00-143-4777	00779	320569	.TERMINAL, LUG	1
11	MFFZZ		90598	60619-13	.BRAID, WIRE MAKE FROM P/N 8663, CAGEC 16428, CUT TO 15 INCHES	1
12	MFFZZ		90598	60175-1	.INSULATION MAKE FROM P/N 08320116, CAGEC 2P653, CUT TO 9.57WX15.81L	1
13	XBFZZ		90598	60626-1	.PANEL	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

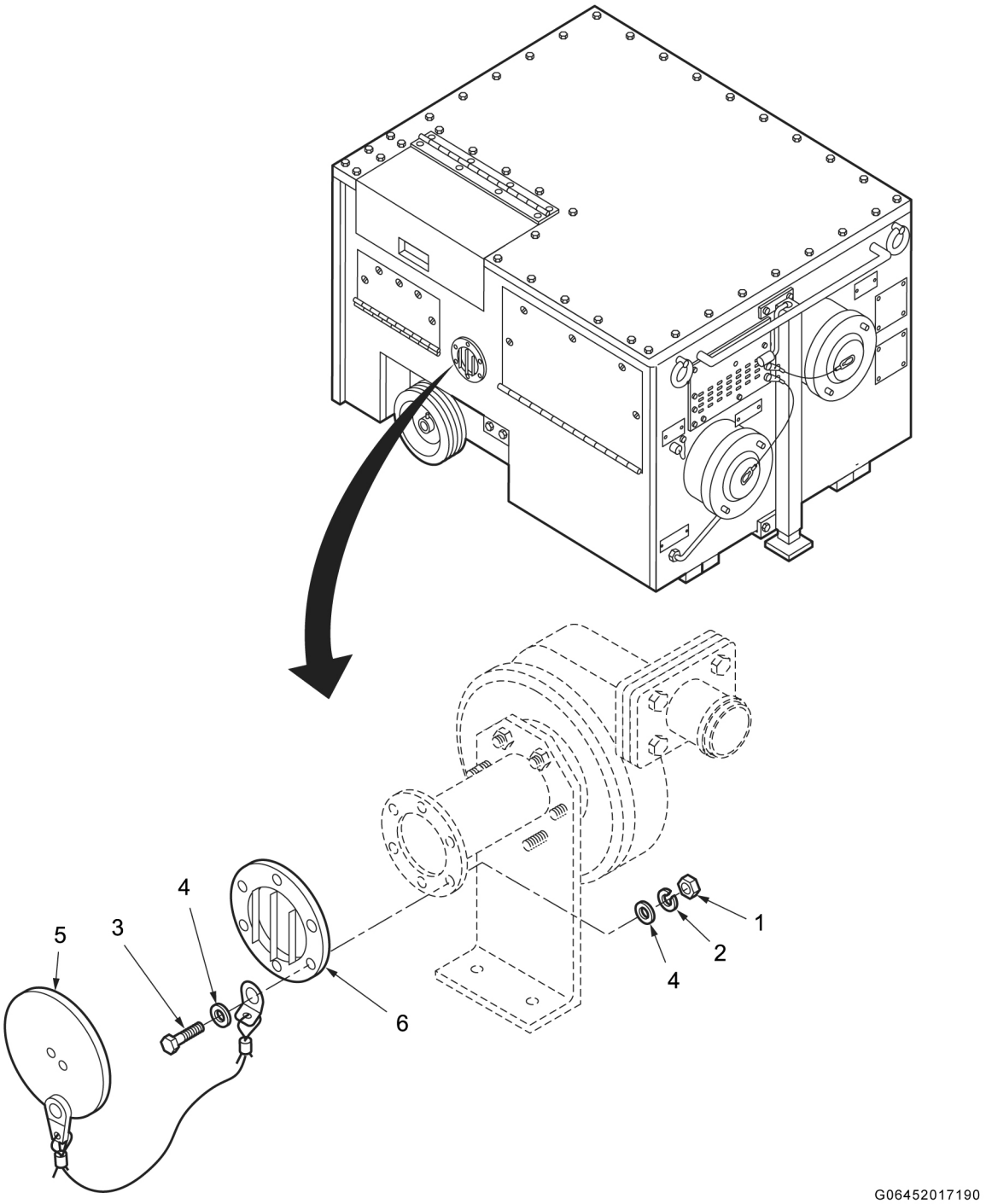


Figure 8. Duct Cover Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0108 DUCT COVER ASSEMBLY	
					FIGURE 8 Duct Cover Assembly.	
1	PAFZZ	5310-00-767-0445	96906	MS51971-2	NUT, PLAIN, HEXAGON	6
2	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	6
3	PAFZZ	5305-00-071-2505	80204	B1821BH025C088N	SCREW,CAP HEXAGON	6
4	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	12
5	XBFZZ		90598	60048-100	COVER, AIR INLET	1
6	XBFZZ		90598	60587-1	GUARD, COMBUSTION	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

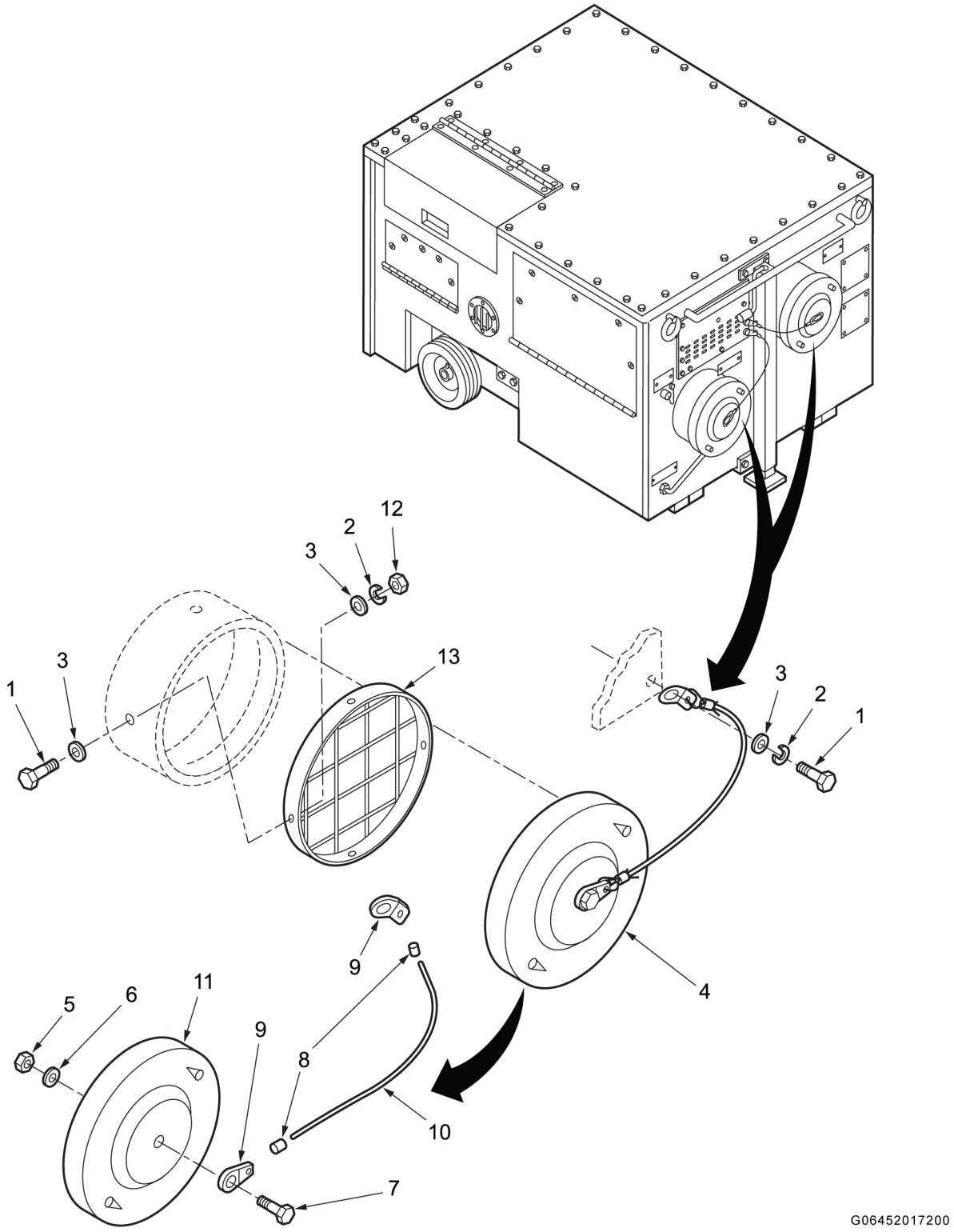


Figure 9. Return/Supply Screen.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0109 RETURN/SUPPLY SCREEN	
					FIGURE 9 Return/Supply Screen.	
1	PAFZZ	5305-01-383-6136	96906	MS51849-65C	SCREW, MACHINE	10
2	PAFZZ	5310-00-933-8120	80205	MS35338-138	WASHER, LOCK	10
3	PAFZZ	5310-00-619-1148	80205	MS15795-808	WASHER, FLAT	18
4	AFFFF		90598	60565-100	COVER, DUCT ASSEMBLY	2
5	PAFZZ	5310-00-208-9255	80205	MS21044C3	.NUT, SELF-LOCKING	1
6	PAFZZ	5310-00-184-8628	65597	925000-0816	.WASHER, FLAT	1
7	PAFZZ	5305-00-059-3660	80205	MS51958-64	.SCREW, MACHINE	1
8	PAFZZ	4030-01-088-2952	96906	MS51844-62	.SWAGING SLEEVE, WIRE	1
9	PAFZZ	5340-01-406-7969	90598	60566-1	.CONNECTOR,ROD END	2
10	MFFZZ		90598	60565-4	.ROPE, WIRE MAKE FROM NSN:4010-00-575-6233,CUT TO 16.00L	1
11	XBFZZ		90598	60565-1	.COVER, DUCT	1
12	PAFZZ	5310-00-988-2652	80205	MS35650-103	NUT, PLAIN HEXAGON	8
13	XBFZZ		90598	60045-100	SCREEN, INLET/ DISCHARGE	2
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 01 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

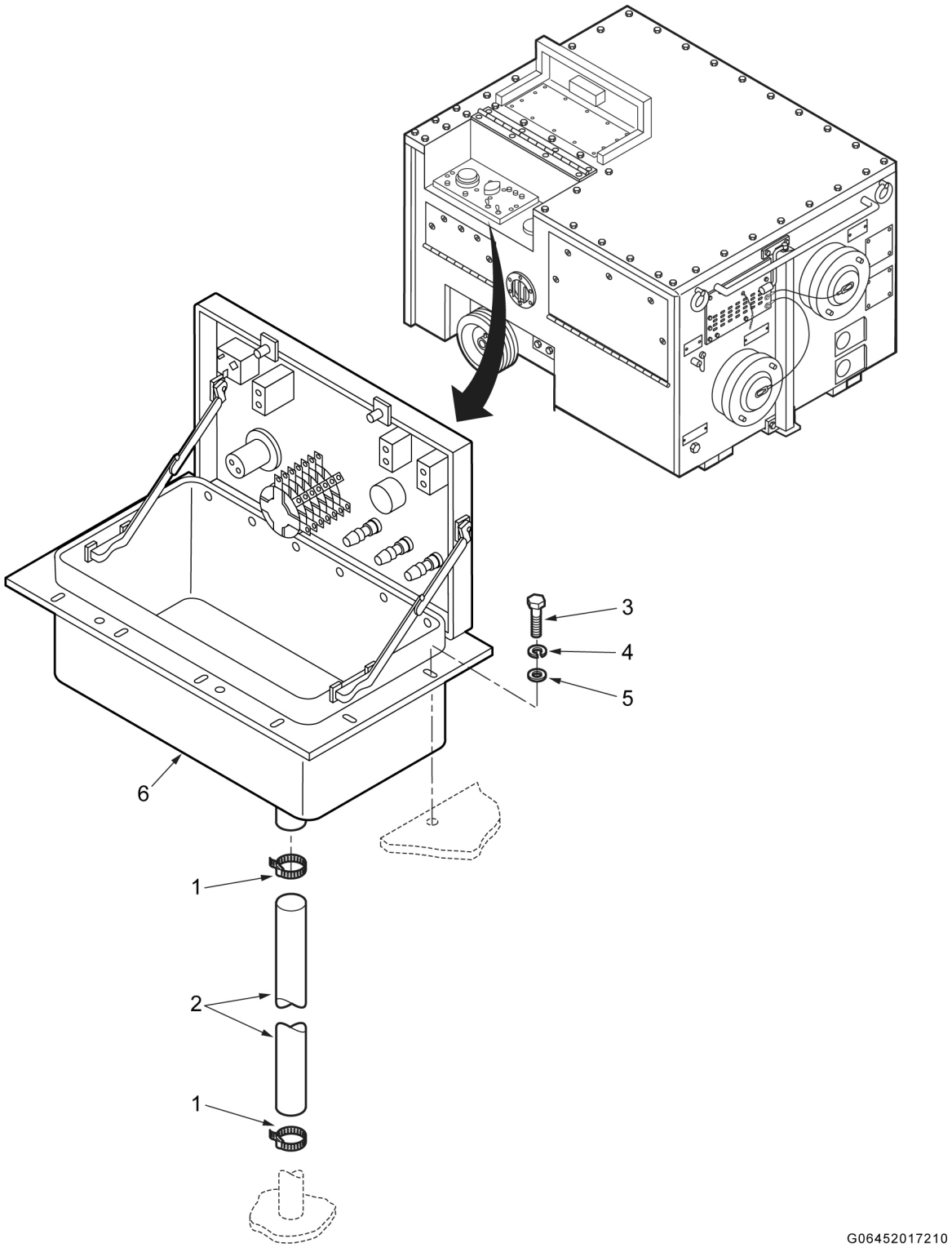


Figure 10. Control Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0201 CONTROL ASSEMBLY FIGURE 10 Control Assembly.	
1	PAFZZ	4730-00-908-3194	58536	A-A-52506-F-12	CLAMP, HOSE	2
2	MFFZZ		90598	60075-1	TUBE, DRAIN MAKE FROM P/N AA00037, CAGEC 86228, CUT TO 18.50 INCHES	1
3	PAFZZ	5305-00-068-0508	07482	1C817P63	SCREW, CAP, HEXAGON HEAD	12
4	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	12
5	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	12
6	AFFFF		90598	60420-100	CONTROL ASSEMBLY	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

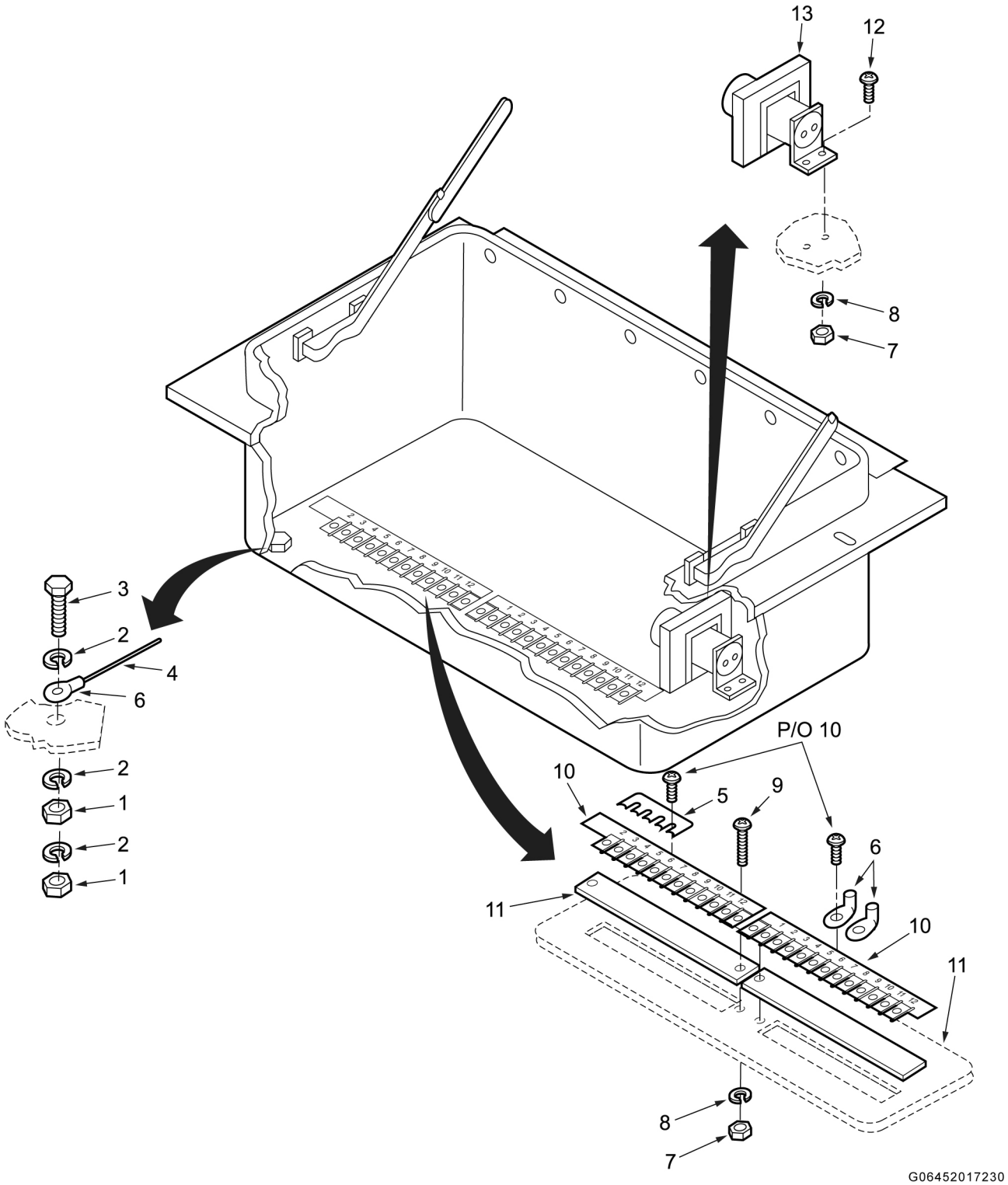


Figure 11. Ground Wire, Terminal Strips and Transformer.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 020101 CONTROL BOX ASSEMBLY	
					FIGURE 11 Ground Wire, Terminal Strips and Transformer.	
1	PAFZZ	5310-01-159-8559	96906	MS35691-406	.NUT, PLAIN HEXAGON	2
2	PAFZZ	5310-00-543-2740	80205	MS35333-74	.WASHER, LOCK	3
3	PAFZZ	5305-00-225-3843	80204	B1821BH025C100N	.SCREW, CAP, HEXAGON HEAD	2
4	MFFZZ		90598	60402-78	.WIRE, ELECTRICAL MAKE FROM P/N M5046/1YZ-9,CAGEC 81349, CUT TO 12 INCHES	1
5	XBFZZ		73631	267-A42-5	.BUS, CONNECTOR	1
6	PAFZZ	5940-00-283-5280	81343	MS25036-106	.TERMINAL, LUG	3
7	PAFZZ	5310-00-934-9761	80205	MS35649-264	.NUT, PLAIN HEXAGON	6
8	PAFZZ	5310-01-145-4564	06602	21C116-06	.WASHER, LOCK	6
9	PAFZZ	5305-00-054-6671	96906	MS51957-46	.SCREW, MACHINE	4
10	PBFZZ	5940-01-497-5779	73631	GFTSX-12	.TERMINAL BOARD	2
11	XBFZZ		73631	267A19-12	.TERMINAL, MARKER	2
12	PAFZZ	5305-00-054-6652	96906	MS51957-28	.SCREW, MACHINE	2
13	PAFZZ	5950-01-551-2820	90598	60438-100	.TRANSFORMER ASSEMBLY	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

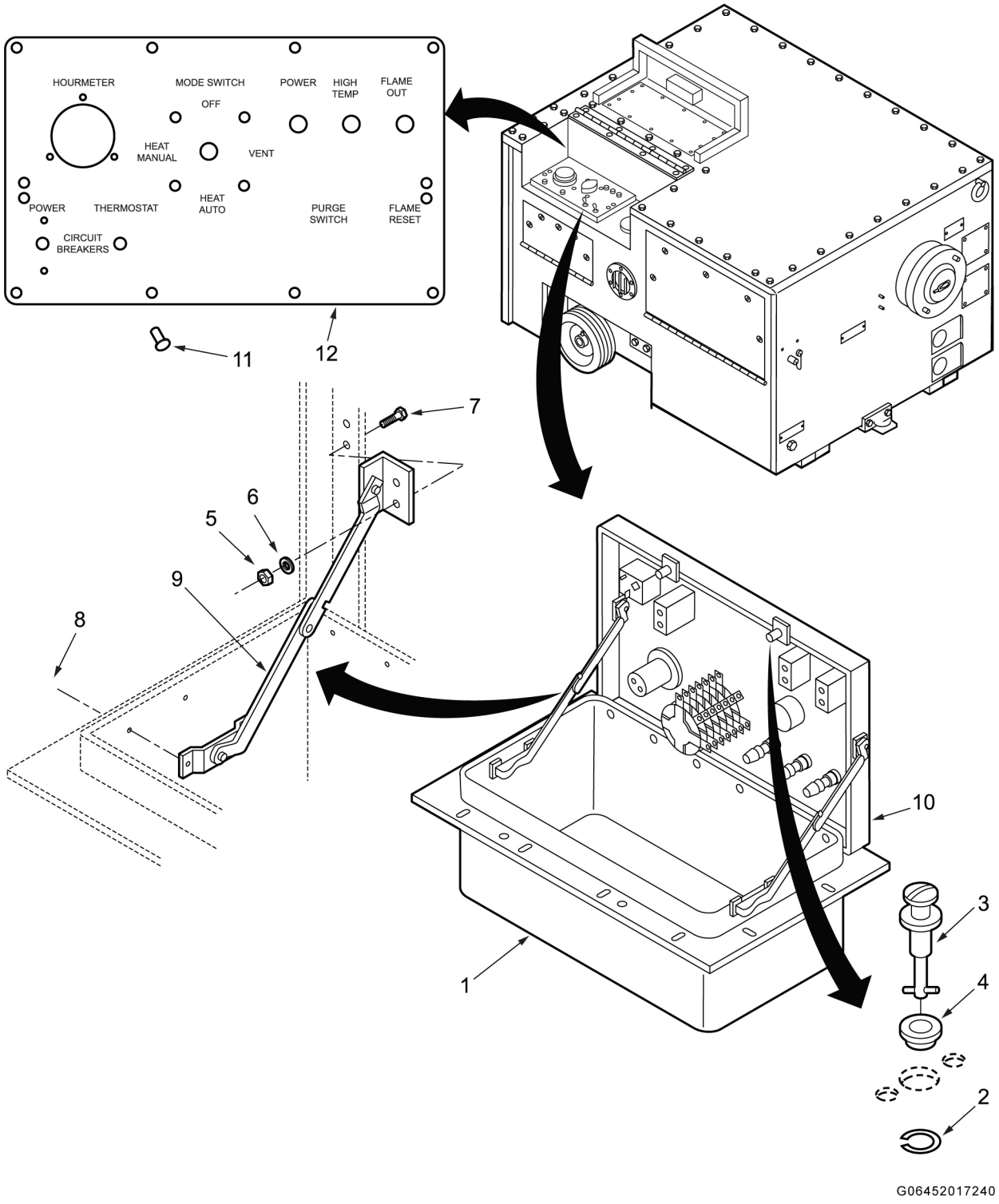


Figure 12. Control Box Assembly (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

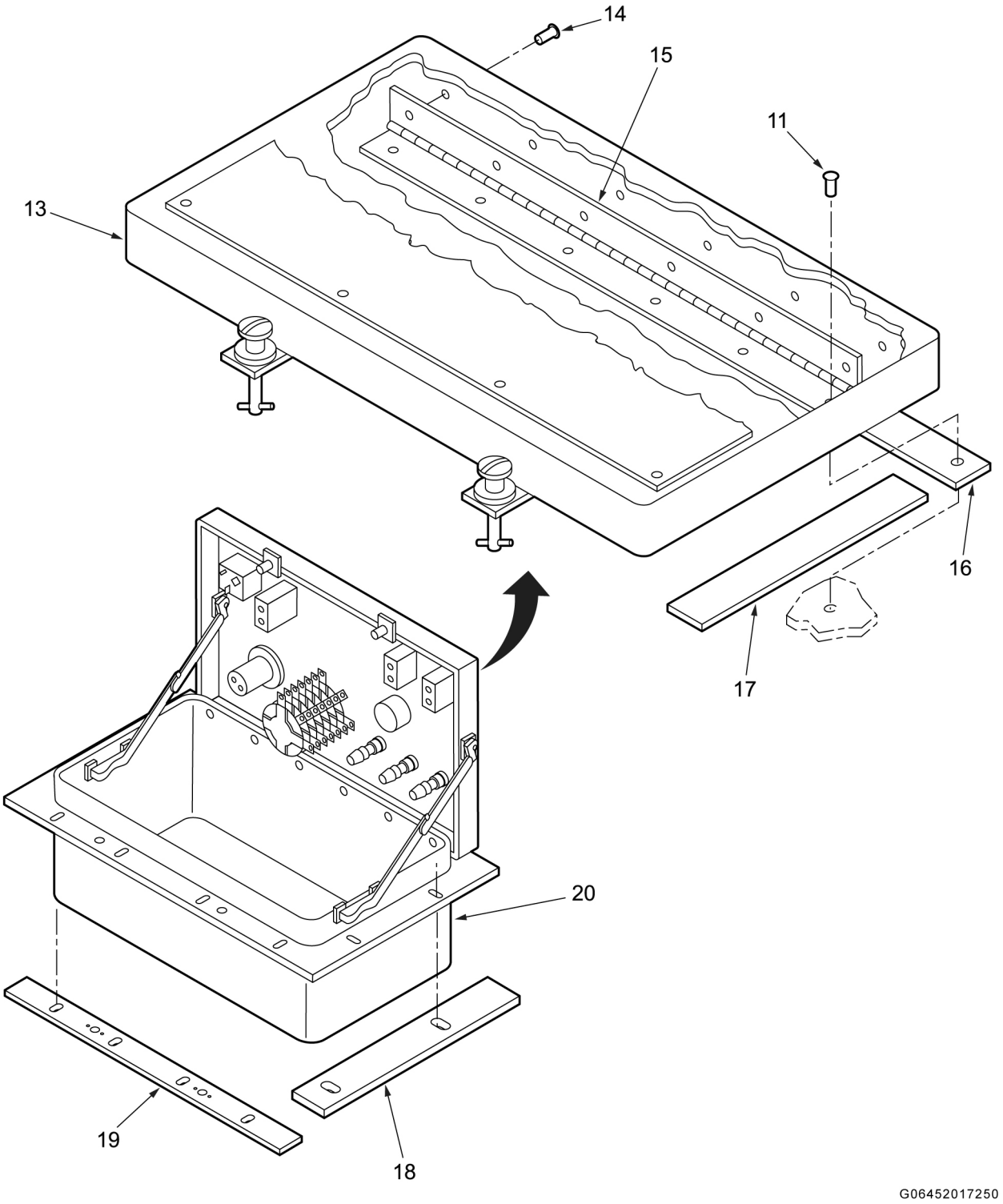


Figure 12. Control Box Assembly (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 020101 CONTROL BOX ASSEMBLY FIGURE 12 Control Box Assembly	
1	XBFFF		90598	60810-100	.CONTROL BOX	1
2	PAFZZ	5325-00-543-3388	71286	40G26-1	..RETAINING RING	2
3	PAFZA	5325-00-839-2277	81205	BACS21X10C	..STUD ASSEMBLY, TURNLOCK	2
4	PAFZZ	5325-00-646-8092	71286	4002-0S	..EYELET TURNLOCK FASTENER	2
5	PAFZZ	5310-00-982-6814	80205	MS21044C08	..NUT, SELF-LOCKING	4
6	PAFZZ	5310-00-809-4061	96906	MS27183-15	..WASHER, FLAT	4
7	PAFZZ	5305-00-054-6671	96906	MS51957-46	..SCREW, MACHINE	4
8	PAFZZ	5320-00-956-7355	07707	AD64H	..RIVET, BLIND	4
9	XBFZZ		90598	60817-101	..SUPPORT ASSEMBLY LEFT	1
10	XBFZZ		90598	60817-100	..SUPPORT ASSEMBLY RIGHT	1
11	PBFZZ	5320-01-295-9924	54089	2314141-2	..RIVET, BLIND	18
12	XBFZZ		90598	60011-1	..PLATE, CONTROL PANEL	1
13	XBFFF		90598	60815-100	..PANEL ASSEMBLY	1
14	PBFZZ	5320-01-295-9924	54089	2314141-2	...RIVET, BLIND	6
15	MFFZZ		90598	60816-1	...HINGE MAKE FROM P/N MS20257C2, CAGEC 96906, CUT TO 14.00L.....	1
16	MFFZZ		90598	60815-5	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 8.00L.....	2
17	MFFZZ		90598	60815-6	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 14.16L.....	2
18	MFFZZ		90598	60810-14	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 10.93L.....	2
19	MFFZZ		90598	60810-15	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 14.78L.....	2
20	XBFZZ		90598	60812-100	..WELDMENT, BOX CONTROL ..... END OF FIGURE	1

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

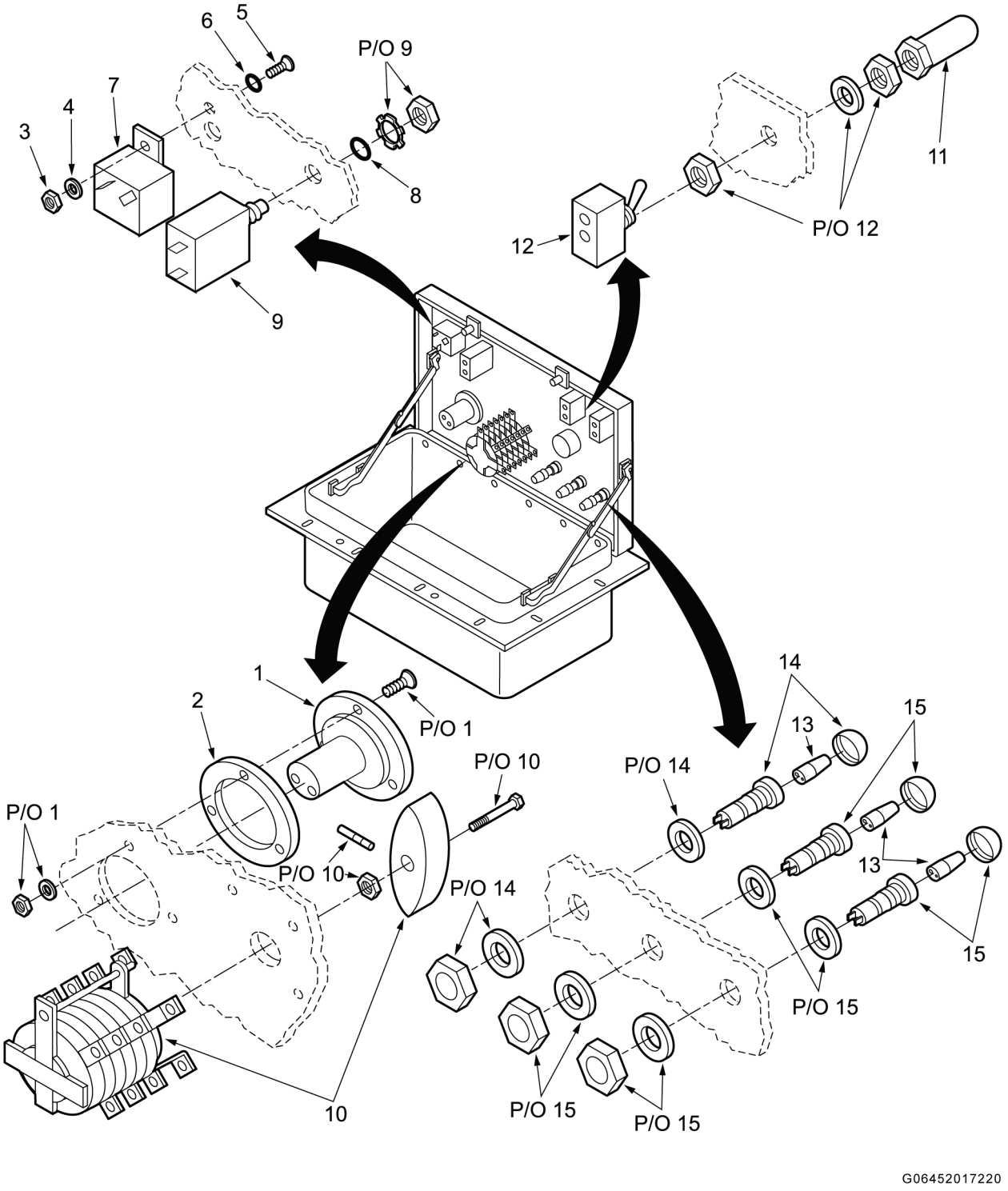


Figure 13. Control Box Panel Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 02010101 CONTROL BOX PANEL ASSEMBLY FIGURE 13 Control Box Panel Assembly.	
1	PAFZZ	6645-00-864-6794	16476	M3971/1-6-S	.METER, TIME TOTALIZING	1
2	XBFZZ	5330-01-545-4144	5RQL2	60824-1	.GASKET MAKE FROM P/N R411NPSA, CAGEC 2P653, CUT TO 2.88 OD X 2.00 ID	1
3	PAFZZ	5310-00-988-2652	80205	MS35650-103	.NUT, PLAIN HEXAGON	2
4	PAFZZ	5310-00-543-5933	80205	MS35333-73	.WASHER, LOCK	2
5	PAFZZ	5305-00-059-3663	80205	MS51958-67	.SCREW, MACHINE	2
6	PAFZZ	5331-01-398-4993	81343	MS9955-107	.O-RING	2
7	PAFZZ	5925-00-270-3998	82647	PDM-25	.CIRCUIT BREAKER	1
8	PAFZZ	5331-00-248-3836	81343	MS29513-012	.O-RING	1
9	PAFZZ	5925-01-397-6052	90598	60403-1	.CIRCUIT BREAKER	1
10	PAFZZ	5930-01-399-3255	28057	12804	.SWITCH, ROTARY	1
11	PBFZA	5930-00-929-2599	81640	24-1164-2	.EXTENSION, TOGGLE	2
12	PAFZZ	5930-00-683-1626	96906	MS24523-30	.SWITCH, TOGGLE GREEN	2
13	PAFZZ	6240-00-939-7859	92966	120MB	.LAMP, INCANDESCENT RED	3
14	PAFZZ	6210-01-399-2448	83330	95-5710-3172-203	.LIGHT, INDICATOR	2
15	PAFZZ	6210-01-399-2452	83330	95-5710-3171-203	.LIGHT, INDICATOR	2
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

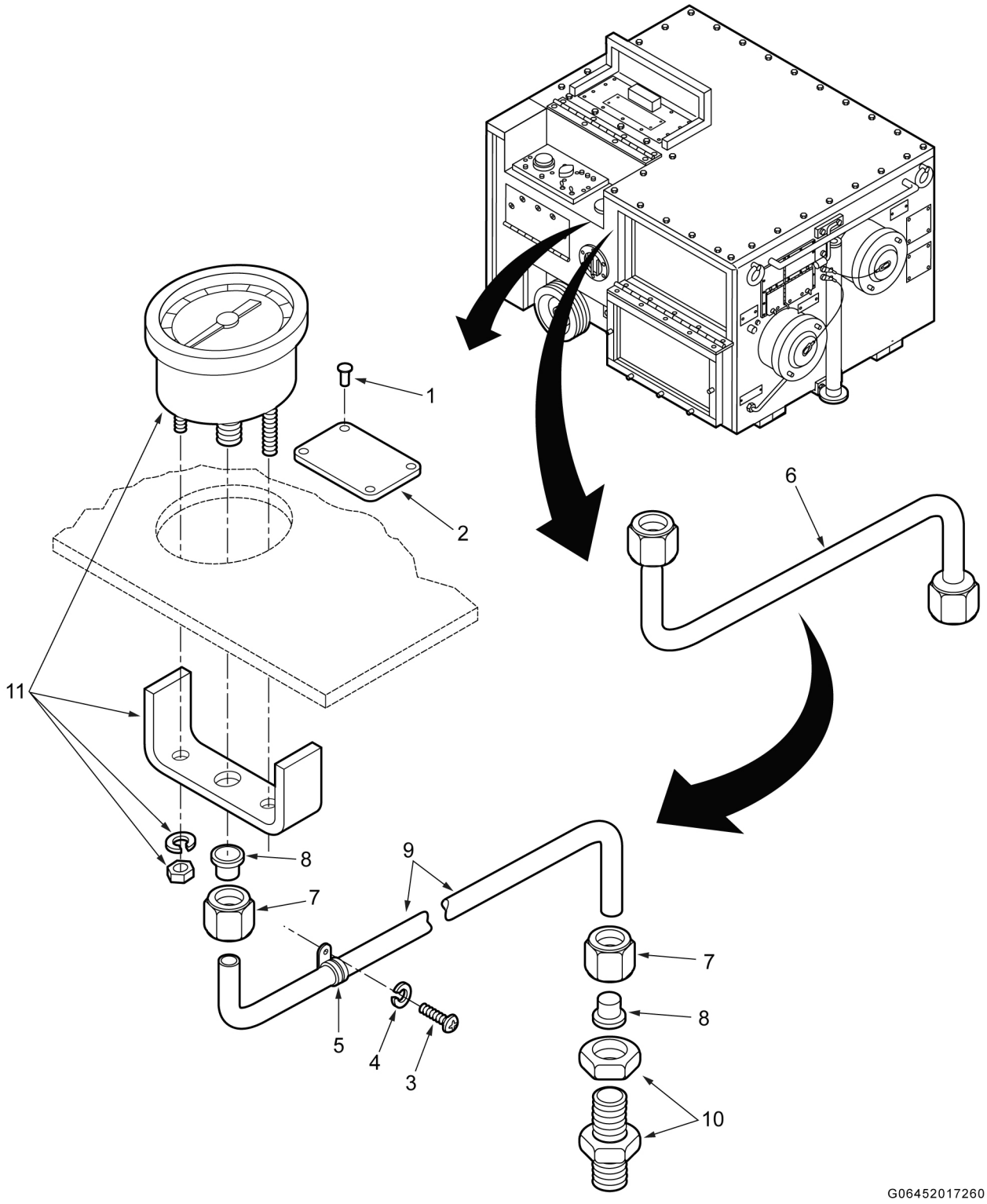


Figure 14. Fuel Pressure Gauge.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0202 FUEL PRESSURE GAUGE	
					FIGURE 14 Fuel Pressure Gauge.	
1	PAFZZ	5320-01-110-7954	06888	AD42AH	RIVET, BLIND	4
2	XBFZZ		90598	60012-1	NAMEPLATE FUEL PRESSURE.....	1
					UOC: YKR	
2	XBFZZ		90598	60012-2	NAMEPLATE FUEL PRESSURE.....	1
					UOC: LPL	
3	PFFZZ	5305-01-292-6306	96906	MS51492-07	SCREW, MACHINE	1
4	PAFZZ	5310-00-559-0070	11083	9B7233	WASHER, LOCK	1
5	PAFZZ	5340-00-079-7837	80205	MS21333-67	CLAMP, LOOP	1
6	PAFFZ	4710-01-497-5104	90598	60488-100	TUBE ASSEMBLY	1
7	PAFZZ	4730-00-314-8366	96906	MS51531B4	.NUT, TUBE COUPLING	2
8	PAFZZ	7930-00-969-6941	81343	SAE J514 4 07011 5C	.SLEEVE, FLARED, TUBE	2
9	XBFZZ		90598	60488-1	.TUBING, FORMED	1
10	XBFZZ		90598	60594-1	.UNION, BULKHEAD	1
11	PAFZZ	6685-01-496-9994	61049	4306317	.GAUGE, PRESSURE	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

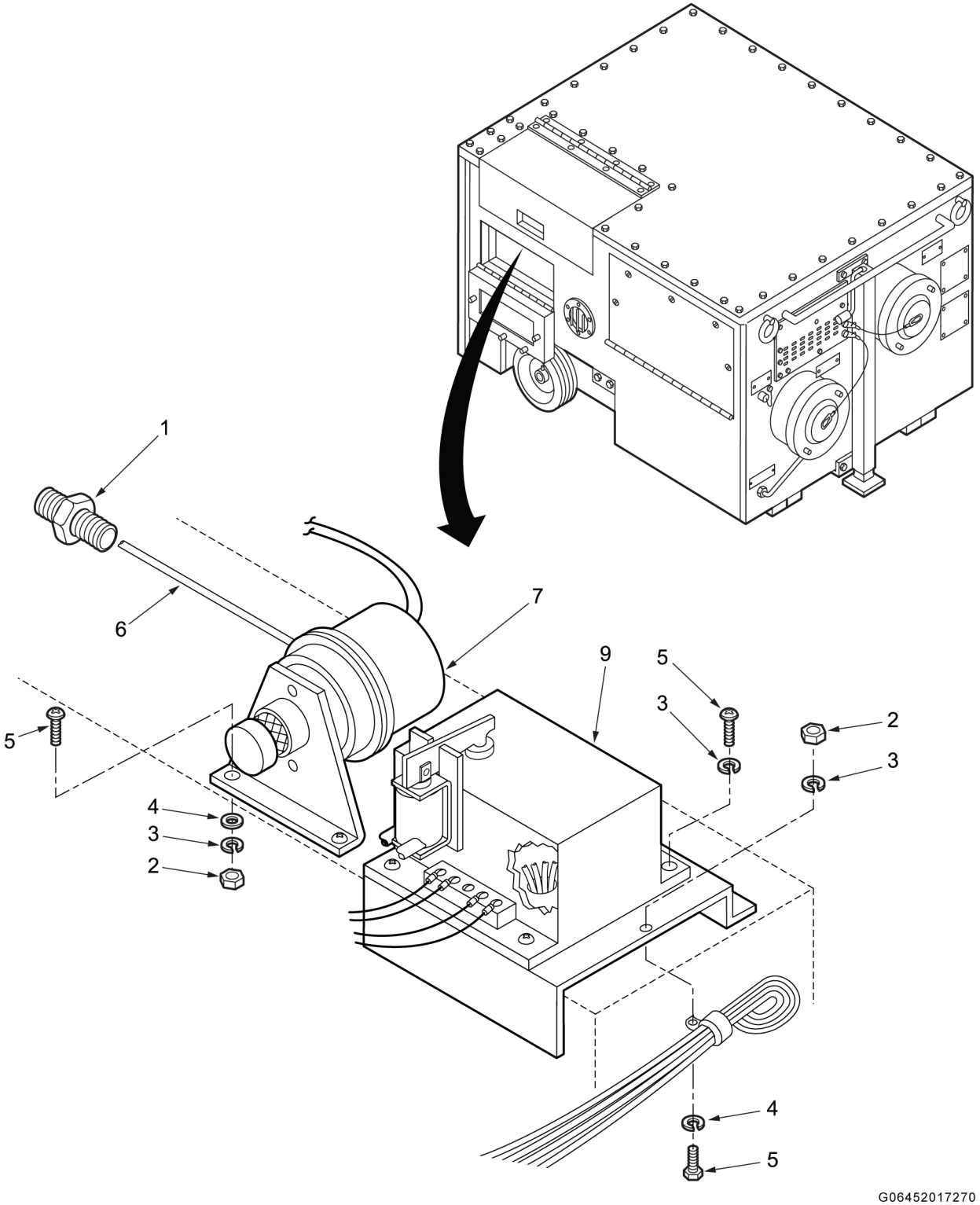


Figure 15. Combustor Control Relay Assembly and Air Pressure Switch (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

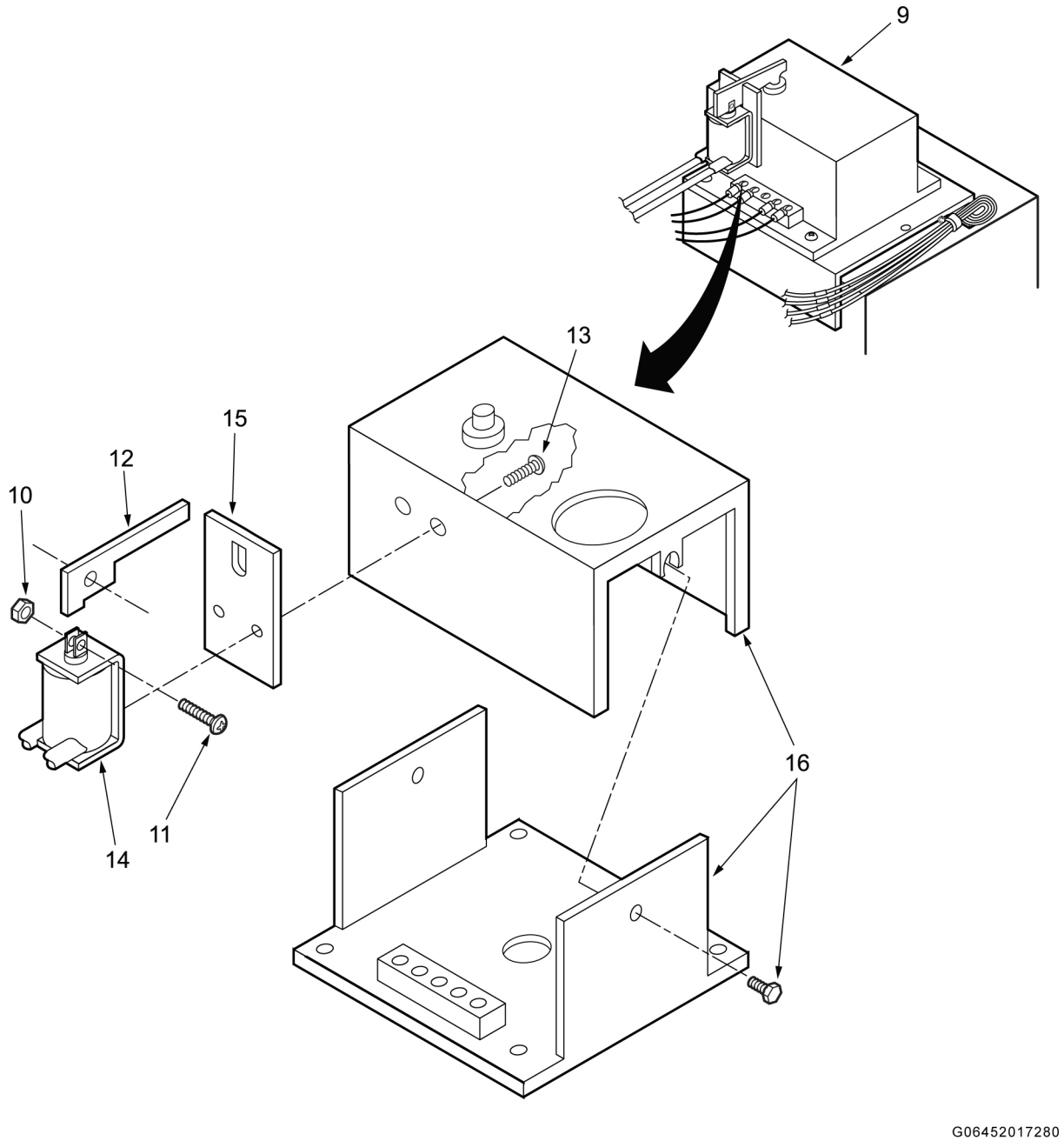


Figure 15. Combustor Control Relay Assembly and Air Pressure Switch (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0203 and 0204 COMBUSTOR CONTROL RELAY ASSEMBLY AND AIR PRESSURE SWITCH	
					FIGURE 15 Combustor Control Relay Assembly and Air Pressure Switch	
1	PAFZZ	4730-01-017-5119	29510	343544R91	ADAPTER, STRAIGHT PI	1
2	PAFZZ	5310-00-934-9757	80205	MS35649-282	NUT, PLAIN, HEXAGON	3
3	PAFZZ	5310-00-559-0070	11083	9B7233	WASHER, LOCK	7
4	PAFZZ	5310-00-809-8544	96906	MS27183-7	WASHER, FLAT	3
5	PAFZZ	5305-00-984-6193	80205	MS35206-245	SCREW, MACHINE	7
6	MFFZZ		90598	60079-1	TUBE,NONMETALLIC MAKE FROM P/N 44-P YELLOW,CAGEC 30327, CUT TO 110.25 INCHES.....	1
7	PAFZZ	5390-01-397-7317	09157	R70-2-HCQ-238	SWITCH, AIR PRESSURE	1
8	PAFZZ	5340-00-079-7837	80205	MS21333-67	CLAMP, LOOP	1
9	AFFFZ	5945-01-497-6064	90598	60811-100	RELAY, ELECTROMAGNET	1
10	PAFZZ	5310-00-982-4999	13499	333-1299-000	.NUT, SELF-LOCKING	1
11	PAFZZ	5305-00-054-5649	96906	MS51957-15	.SCREW, MACHINE	1
12	XBFZZ		90598	60822-1	.LEVER ARM	1
13	PAFZZ	5305-00-059-3655	80205	MS51958-59	.SCREW, MACHINE	2
14	PAFZZ	5945-01-398-2758	73662	C3419-M-33	.SOLENOID, ELECTRICAL	1
15	XBFZZ		90598	60821-1	.PLATE, RETAINER	1
16	PAFZZ	5930-01-398-7370	90598	60432-1	.SWITCH, THERMOSTATIC	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 02 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

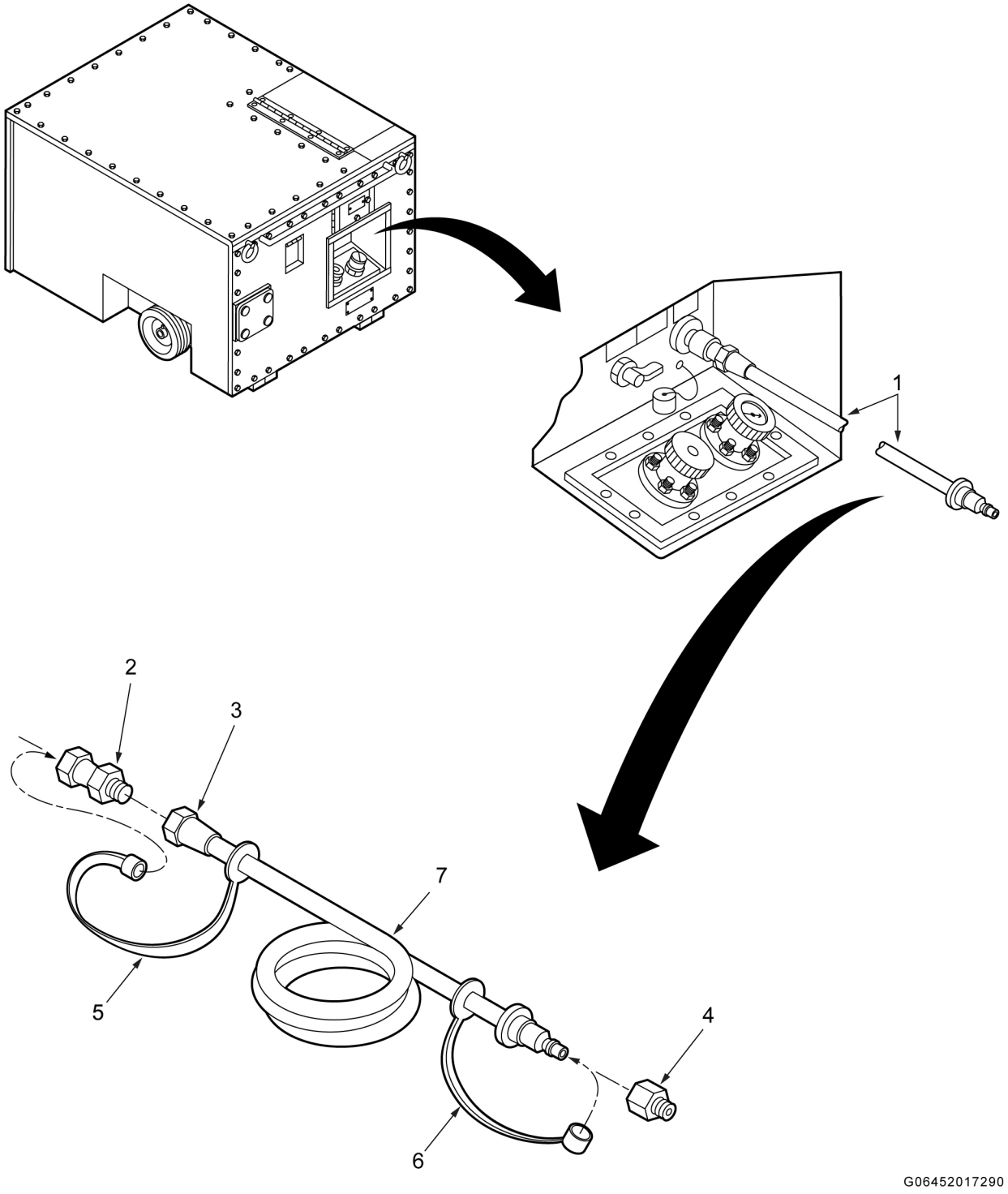


Figure 16. External Fuel Connection and Hose.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0301 EXTERNAL FUEL CONNECTION AND HOSE	
					FIGURE 16 External Fuel Connection and Hose.	
1	PAFFZ	4720-01-483-3693	98255	60490-100	HOSE ASSEMBLY	1
					UOC: YKR	
1	PAFFZ	4720-01-545-4461	5RQL2	60210-100	HOSE ASSEMBLY	1
					UOC: LPL	
2	PAFZZ	4730-01-398-5665	01276	9100X5X4	.ADAPTER, STRAIGHT PIPE TO TUBE	1
3	PAFZZ	4730-00-334-7840	97403	13218E0181-7	.ADAPTER, STRAIGHT PIPE	1
4	PAFZZ	4730-01-290-1366	78357	A28-1C6-6-56	.COUPLING, HALF QUICK DISCONNECT	1
					UOC: YKR	
4	PFFZZ	4730-01-483-9768	78357	AVHC6-6-EM	.COUPLING, HALF QUICK DISCONNECT	1
					UOC: LPL	
5	PAFZZ	5340-01-307-4394	97111	H2-66M	.PLUG, PROTECTIVE DUST	1
6	PAFZZ	5340-01-356-5057	97111	H3-65M	.CAP, PROTECTIVE DUST	1
					UOC: YKR	
6	PBFZZ	5340-01-190-7979	78357	PDP-6	.PLUG, PROTECTIVE DUST	1
					UOC: LPL	
7	XAFZZ	4720-00-228-1078	96906	MS28741-6-3000	.HOSE ASSEMBLY NONMETALLIC	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

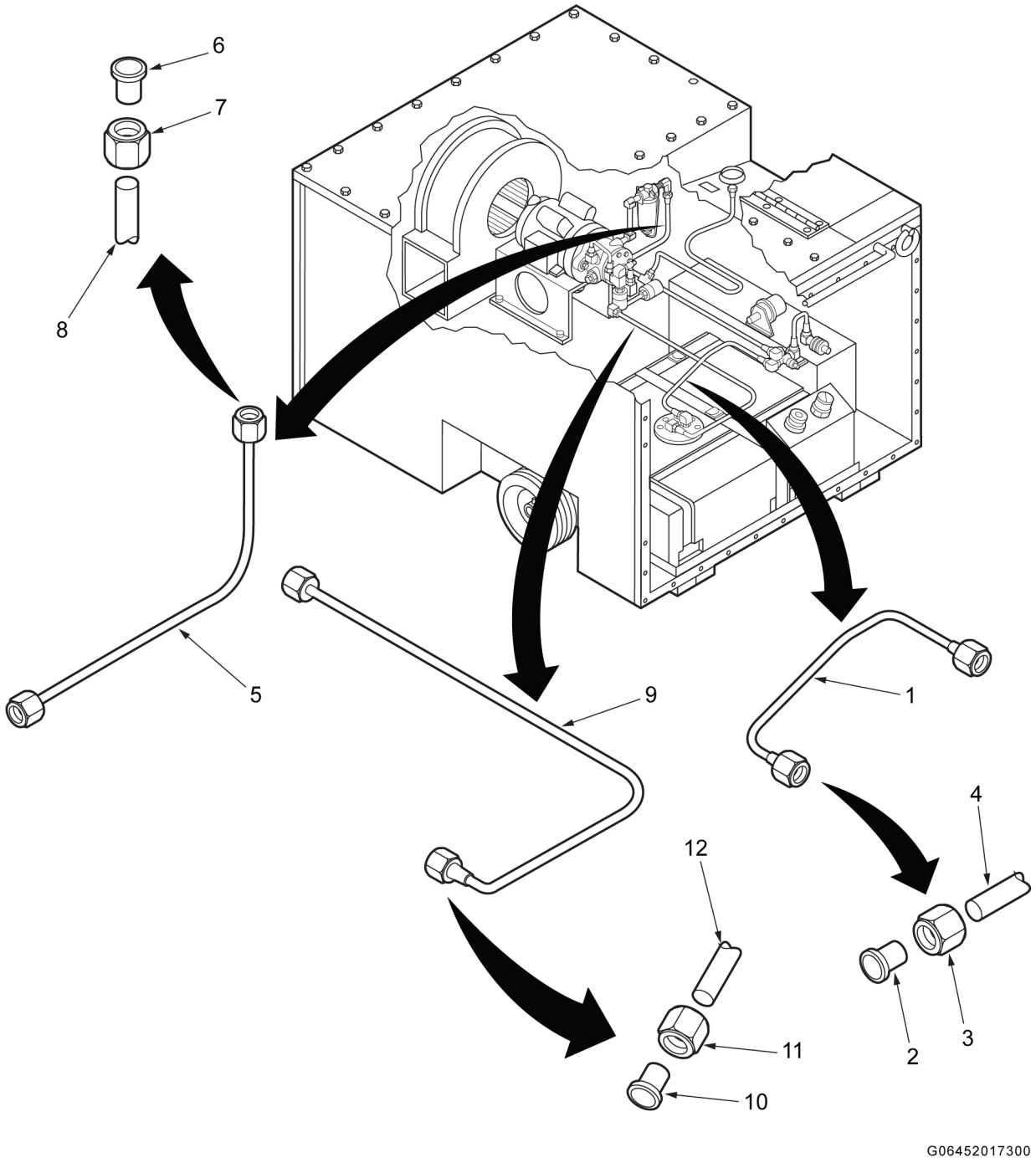


Figure 17. Fuel Lines Assemblies.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0302 FUEL LINES ASSEMBLIES	
					FIGURE 17 Fuel Lines Assemblies.	
1	PBFFZ	4710-01-497-5102	90598	60484-100	TUBE ASSEMBLY, METAL	1
2	PFFZZ	4730-00-816-8558	96906	MS51533B6	.SLEEVE, FLARED, TUBE	2
3	PFFZZ	4730-01-398-8324	96906	MS51531B6Z	.NUT, TUBE COUPLING	2
4	MFFZZ		90598	60484-1	.TUBE, METALLIC MAKE FROM P/N ASTMB280, CAGEC 81346, CUT TO 0.250 OD X11.00L	1
5	PBFFF	4710-01-497-4836	90598	60487-100	TUBE ASSEMBLY, METAL	1
6	PAFZZ	7930-00-969-6941	81343	SAE J514 4 07011 5C	.SLEEVE, FLARED, TUBE	2
7	PAFZZ	4730-00-314-8366	96906	MS51531B4	.NUT, TUBE COUPLING	1
8	MFFZZ		90598	60487-1	.TUBE, METALLIC MAKE FROM P/N ASTMB280, CAGEC 81346, CUT TO 0.250 OD X11.75L	1
9	PAFFZ	4710-01-497-4849	90598	60485-100	TUBE ASSEMBLY, METAL	1
10	PFFZZ	4730-00-816-8558	96906	MS51533B6	.SLEEVE, FLARED, TUBE	2
11	PFFZZ	4730-01-398-8324	96906	MS51531B6Z	.NUT, TUBE COUPLING	2
12	MFFZZ		90598	60485-1	.TUBE, METALLIC MAKE FROM P/N ASTMB280, CAGEC 81346, CUT TO 0.250 OD X31.75L	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

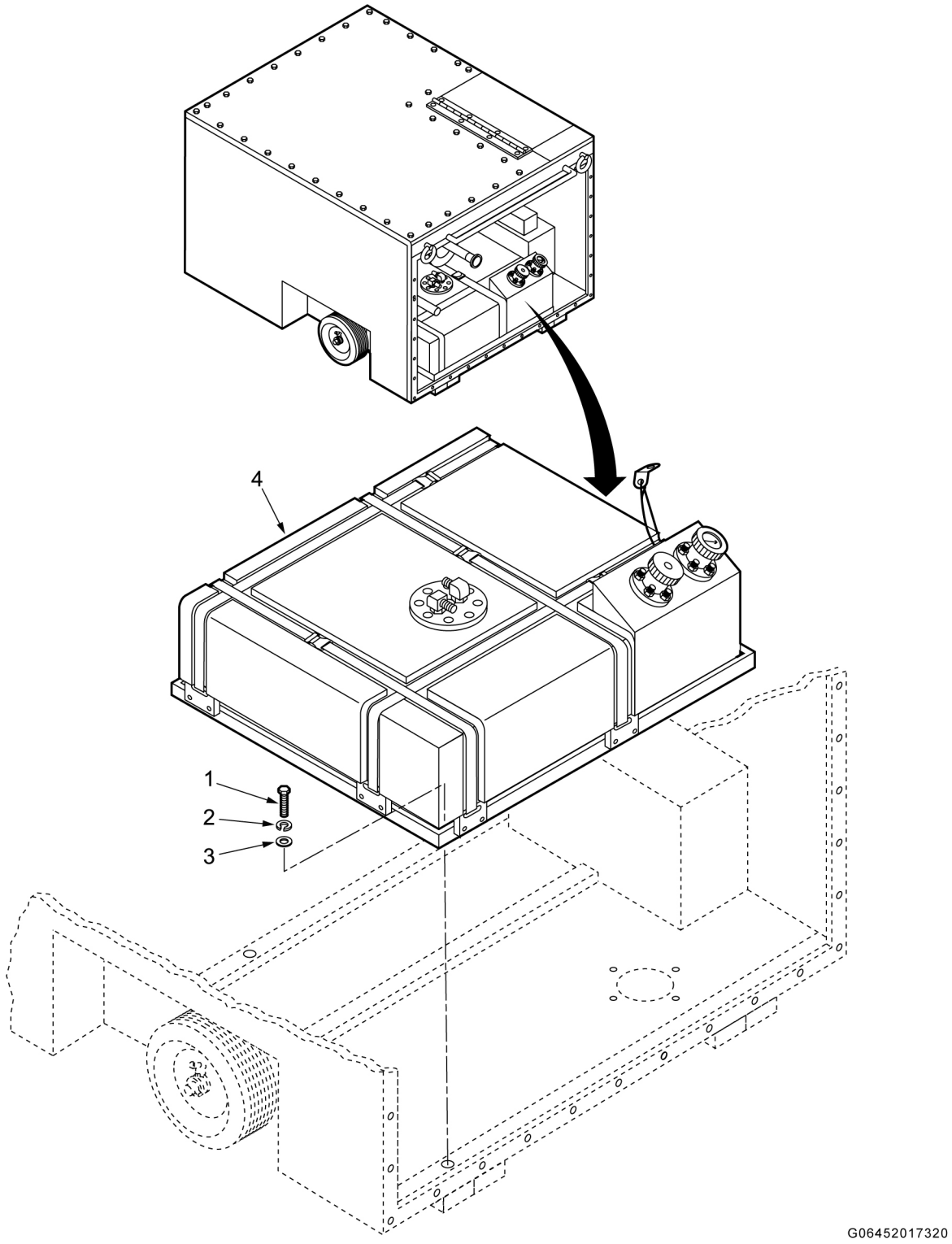


Figure 18. Fuel Tank Assembly and Fuel Gauge (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

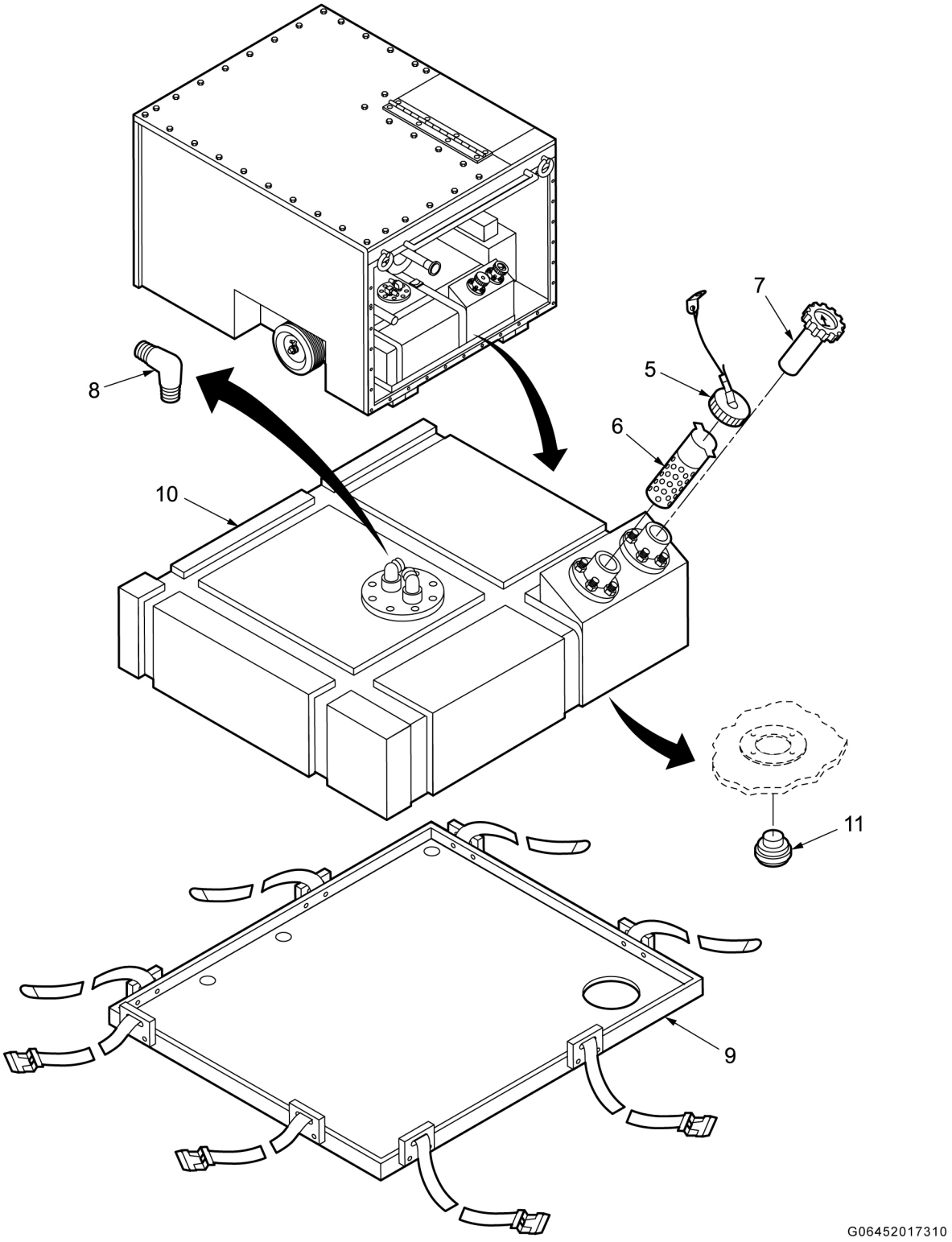


Figure 18. Fuel Tank Assembly and Fuel Gauge (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0303 and 0304 FUEL TANK ASSEMBLY AND FUEL GAUGE	
					FIGURE 18 Fuel Tank Assembly and Fuel Gauge	
1	PAFZZ	5305-00-068-0508	07482	1C817P63	SCREW, CAP, HEXAGON HEAD	8
2	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	8
3	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	8
4	PFFFZ	2910-01-498-3151	90598	60450-100	TANK, FUEL, PORTABLE	1
5	PAFZZ	5342-01-399-2018	90598	60023-100	.CAP, FILLER OPENING FUEL	1
6	PAFZZ	2910-01-399-4210	90598	60027-100	.FILTER, ELEMENT, FLUID	1
7	PAFZZ	6680-01-399-1607	23224	200984	.GAUGE, ROD CAP LIQUID LEVEL ...	1
8	PAFZZ	4730-01-458-7779	96906	MS51504B6Z	.ELBOW, PIPE TO TUBE	2
9	XBFZZ		90598	60029-100	.PAN ASSEMBLY, FUEL	3
10	PBFFO	2910-01-399-5522	90598	60450-100	.TANK, FUEL, ENGINE	1
11	PBFZZ	4730-01-227-1954	30780	05HP-8	..PLUG, TUBE FITTING, TANK	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

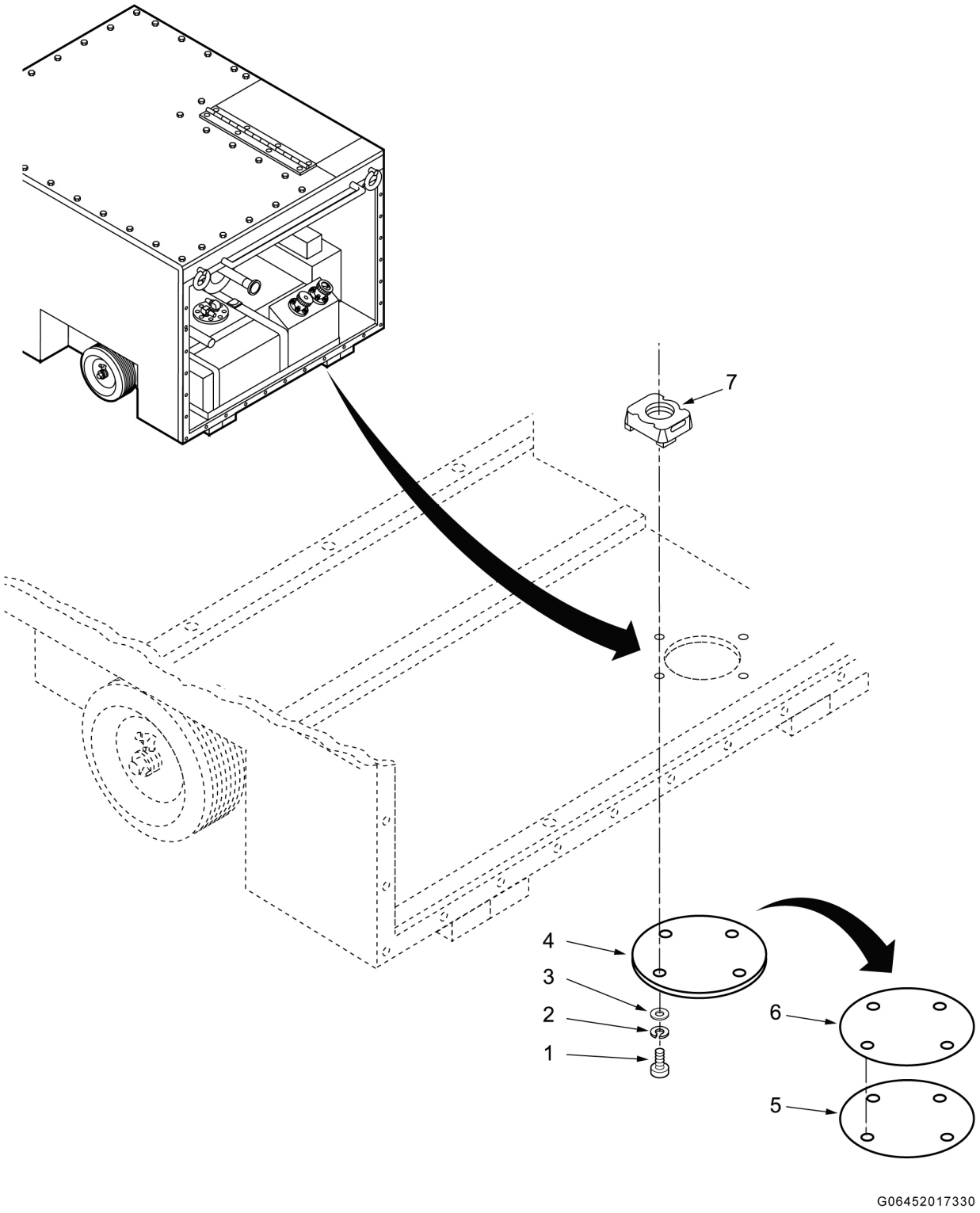


Figure 19. Fuel Drain Cover.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0305 FUEL DRAIN COVER FIGURE 19 Fuel Drain Cover.	
1	PAFZZ	5305-00-068-0508	07482	1C817P63	SCREW, CAP, HEXAGON HEAD	4
2	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	4
3	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	4
4	XBFFF		90598	60498-100	COVER, FUEL DRAIN	1
5	XBFZZ		90598	60498-1	.PLATE	1
6	MFFZZ		90598	60499-1	.GASKET MAKE FROM P/N 8635K542, CAGEC 39428 CUT TO 4.250 OD	1
7	PAFZZ	5340-00-297-0312	78553	C7931-1420	RETAINER, NUT AND BOLT	4
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 03 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

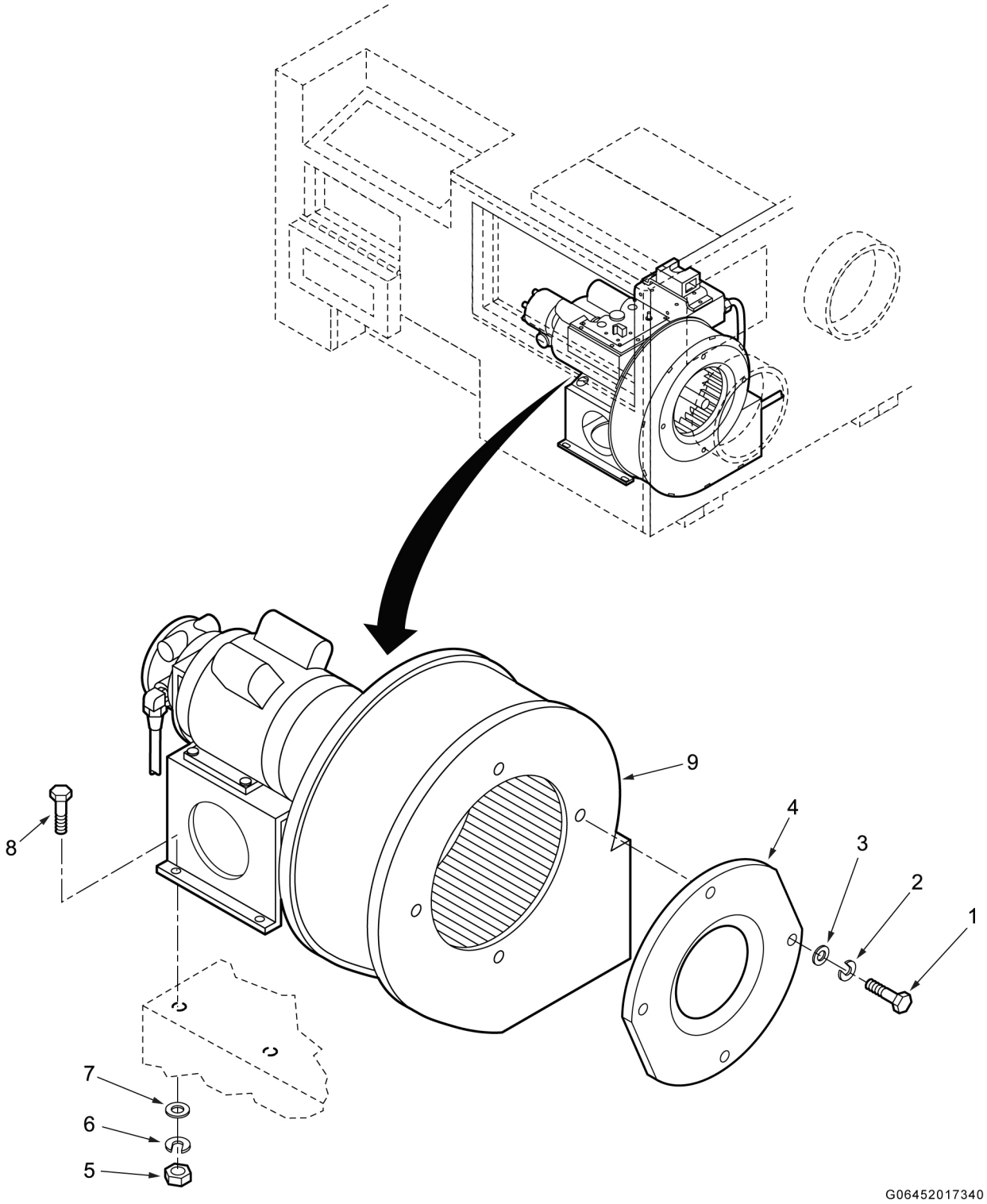


Figure 20. Fan Pump/Motor Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0401 FAN/PUMP/MOTOR ASSEMBLY	
					FIGURE 20 Fan Pump/Motor Assembly.	
1	PAFZZ	5305-00-068-0508	07482	1C817P63	SCREW, CAP, HEXAGON HEAD	4
2	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	4
3	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	4
4	XBFZZ		90598	60503-1	INLET CONE	1
5	PAFZZ	5310-00-767-0445	96906	MS51971-2	NUT, PLAIN, HEXAGON	4
6	PAFZZ	5310-00-974-6623	80205	MS35338-140	WASHER, LOCK	4
7	PAFZZ	5310-00-625-5756	80205	MS15795-812	WASHER, FLAT	4
8	PAFZZ	5306-00-226-4825	80204	B1821BH031C075N	BOLT, MACHINE	4
9	PFFFZ	4140-01-497-1143	90598	60506-100	HOUSING, CENTRIFUGAL FAN	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

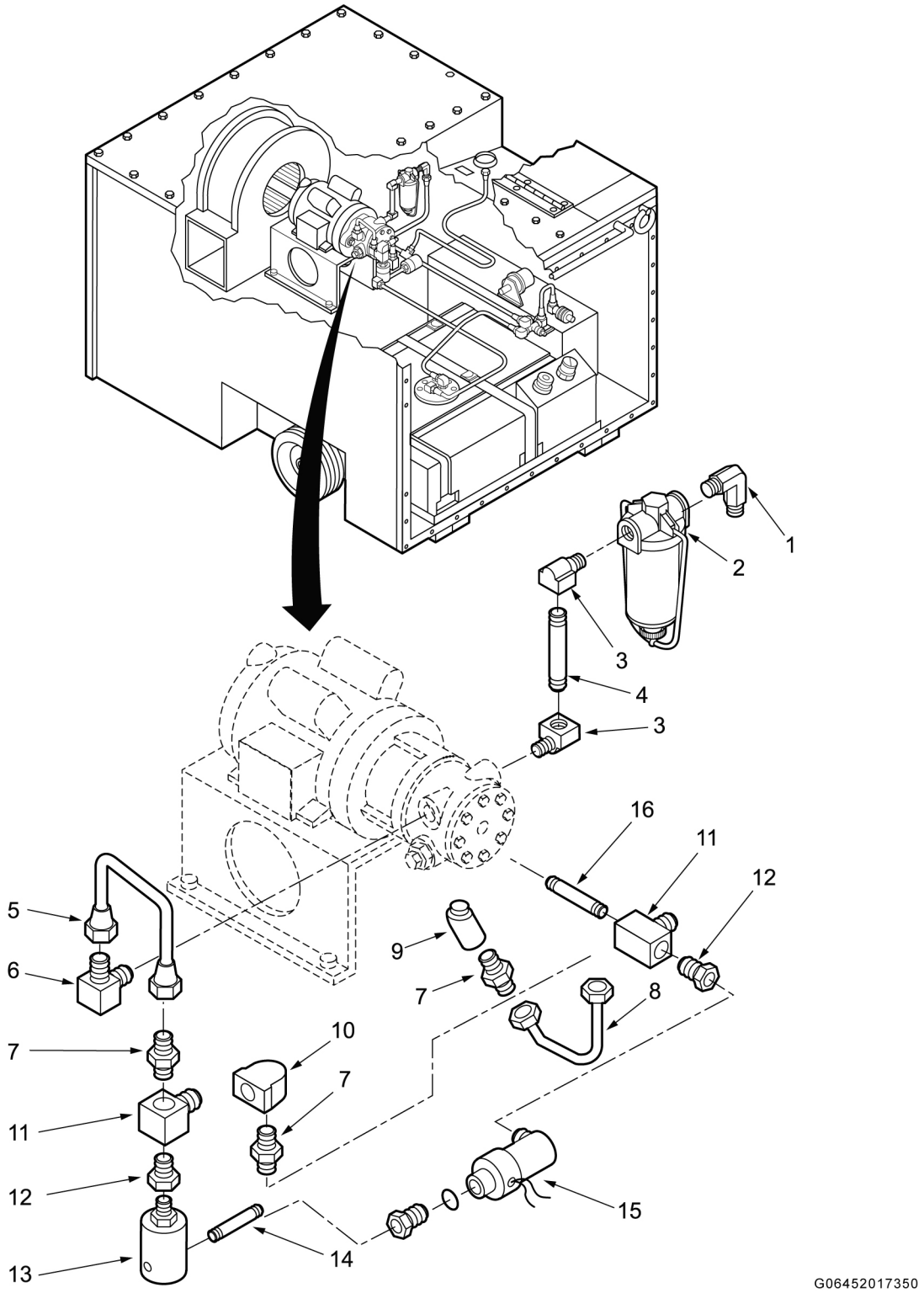


Figure 21. Solenoid Valves.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0402 SOLENOID VALVES FIGURE 21 Solenoid Valves.	
1	PAFZZ	4730-01-212-2601	96906	MS51504A6Z	.ELBOW, PIPE TO TUBE	1
2	PAFZZ	2910-01-312-1406	90005	1752029-01	.FILTER, FLUID	1
3	PAFZZ	4730-01-240-6108	19207	12258879-2	.ELBOW, PIPE	2
4	PAFZZ	4730-00-196-1964	81346	B687R-10B	.NIPPLE, PIPE	1
5	PAFZZ	4710-01-497-4833	90598	60486-100	.TUBE ASSEMBLY, METAL	1
6	PAFZZ	4730-01-210-3516	96906	MS51504A4-4Z	.ELBOW, PIPE TO TUBE	1
7	PAFZZ	4730-00-187-0840	81343	AS5194	.ADAPTER, STRAIGHT, PIPE	3
8	PAFZZ	4710-01-497-4841	90598	60492-100	.TUBE ASSEMBLY, METAL	1
9	PAFZZ	4730-00-277-5683	96906	MS14307-1	.ELBOW, PIPE	1
10	PAFZZ	4730-01-398-8325	96906	MS51504A4Z	.ELBOW, PIPE TO TUBE	1
11	PFFZZ	4730-00-263-2733	81343	J530	.TEE, PIPE	2
12	PAFZZ	4730-00-011-9922	81343	AS4861	.BUSHING, PIPE	2
13	PAFZZ	4810-01-290-4925	73212	3 X 290	.VALVE, SOLENOID	1
14	PAFZZ	4730-00-222-1837	81348	B687R-20B	.NIPPLE, PIPE	1
15	PAFZZ	4810-01-291-9533	73212	6X409	.VALVE, SOLENOID	1
16	PAFZZ	4730-00-193-2707	81346	B687R-6B	.NIPPLE, PIPE	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

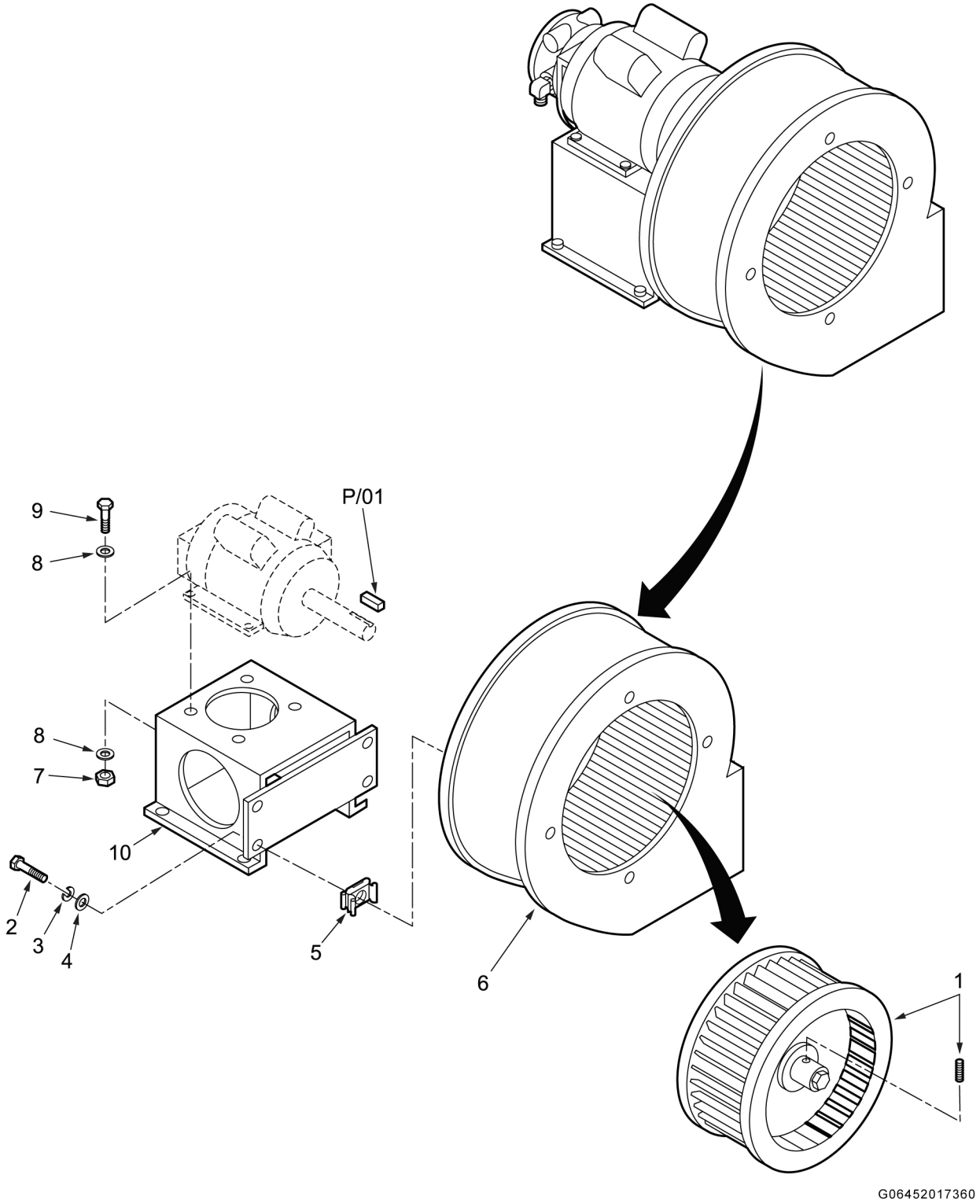


Figure 22. Circulating Air Motor and Fan.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0403 CIRCULATING AIR MOTOR AND FAN	
					FIGURE 22 Circulating Air Motor and Fan.	
1	XBFZZ		84636	TBD3	.BLOWER WHEEL	1
2	PAFZZ	5305-00-068-0508	07482	1C817P63	.SCREW, CAP, HEXAGON HEAD	8
3	PAFZZ	5310-00-933-8121	26196	004-003005-020	.WASHER, LOCK	8
4	PAFZZ	5310-00-582-5677	80205	MS15795-810	.WASHER, FLAT	8
5	PAFZZ	5340-00-297-0312	78553	C7931-1420	.RETAINER, NUT AND BOLT	8
6	XBFZZ		90598	60501-100	.FAN SCROLL	1
7	PAFZZ	5310-00-984-3806	81349	M45913/1-5CG5C	.NUT, SELF-LOCKING	4
8	PAFZZ	5310-00-625-5756	80205	MS15795-812	.WASHER, FLAT	8
9	PAFZZ	5306-00-226-4826	80204	B1821BH031C088N	.BOLT, MACHINE	4
10	XBFZZ		90598	60504-100	.BASE, MOTOR MOUNT	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

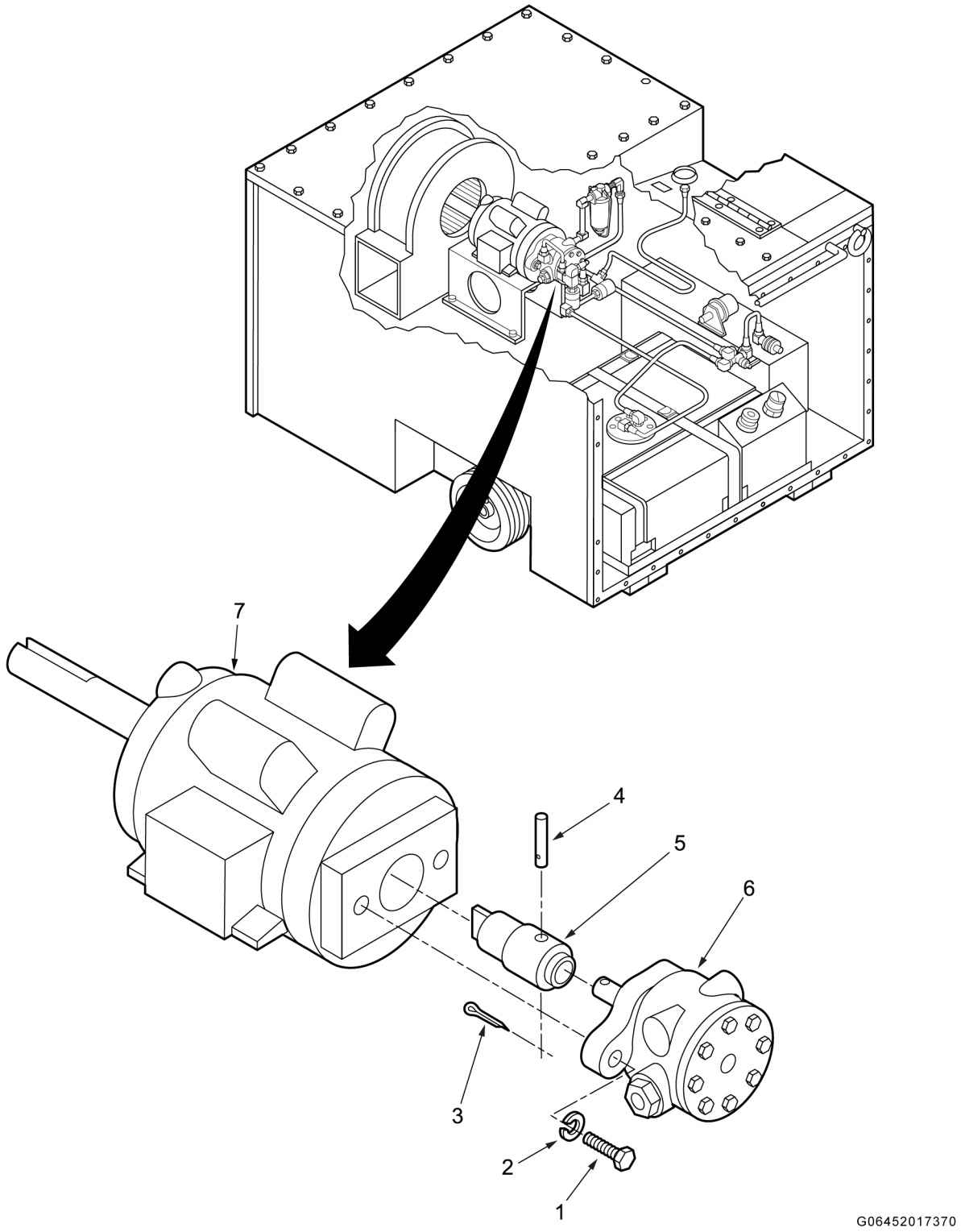


Figure 23. Fuel Pump.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0404 FUEL PUMP FIGURE 23 Fuel Pump.	
1	PAFZZ	5305-01-358-3743	96906	MS51849-139C	.SCREW, MACHINE	2
2	PAFZZ	5310-00-984-7042	03670	14929	.WASHER, LOCK	2
3	PAFZZ	5315-00-187-9528	80205	MS24665-142	.PIN, COTTER	1
4	PAFZZ	5315-00-058-9771	80205	MS16562-233	.PIN, SPRING	1
5	PAFZZ	3010-01-482-1577	5RQL2	60634-1	.COUPLING, SHAFT RIGID	1
6	PAFZZ	4320-01-299-0460	1Y370	J6BC-325	.PUMP, ROTARY	1
7	PAFZZ	6105-01-398-7369	90598	60408-1	.MOTOR, ALTERNATING CURRENT .	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 04 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 05

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 05 - (CONTINUED)

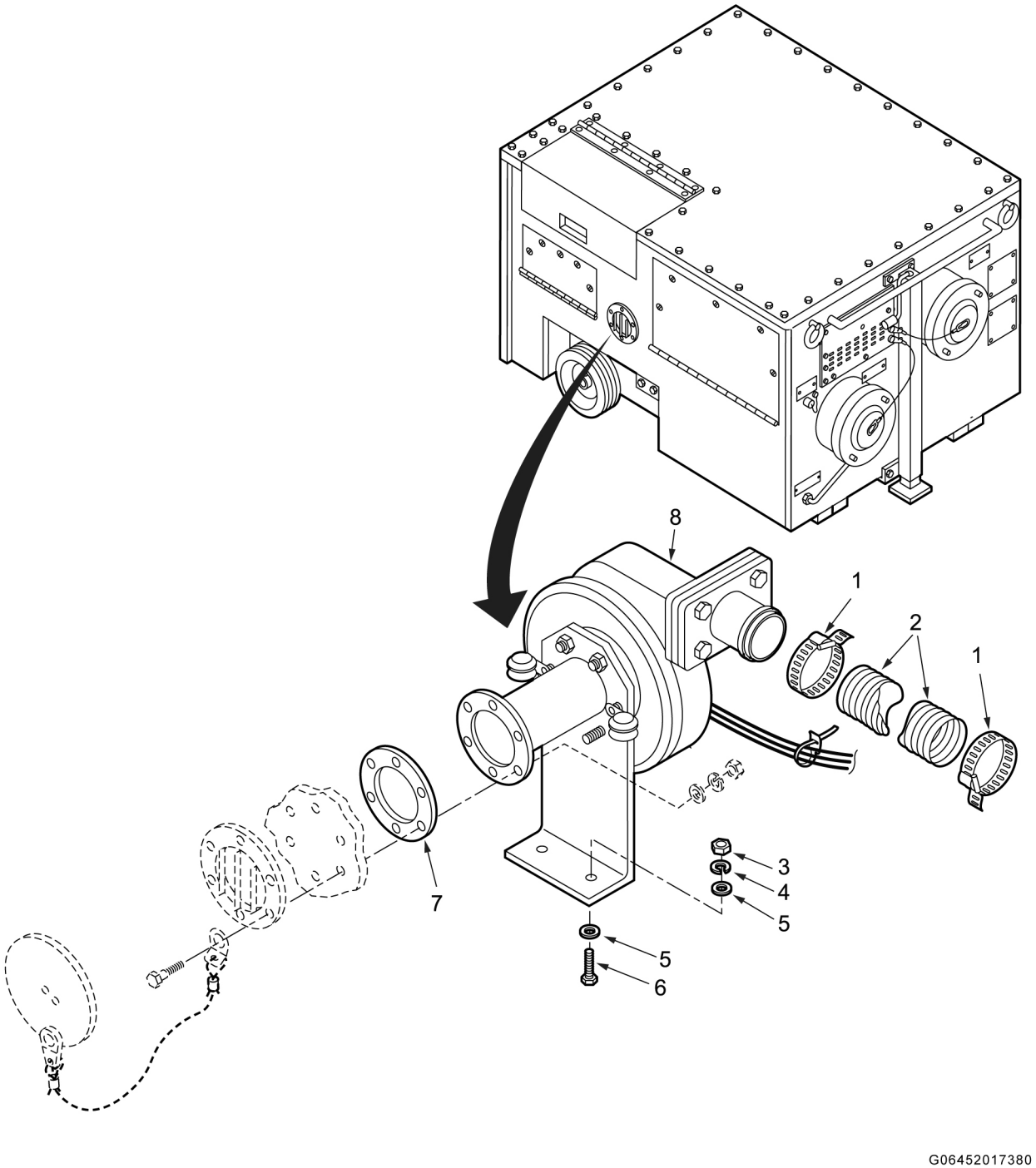


Figure 24. Combustion Fan and Mount Assembly (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 05 - (CONTINUED)

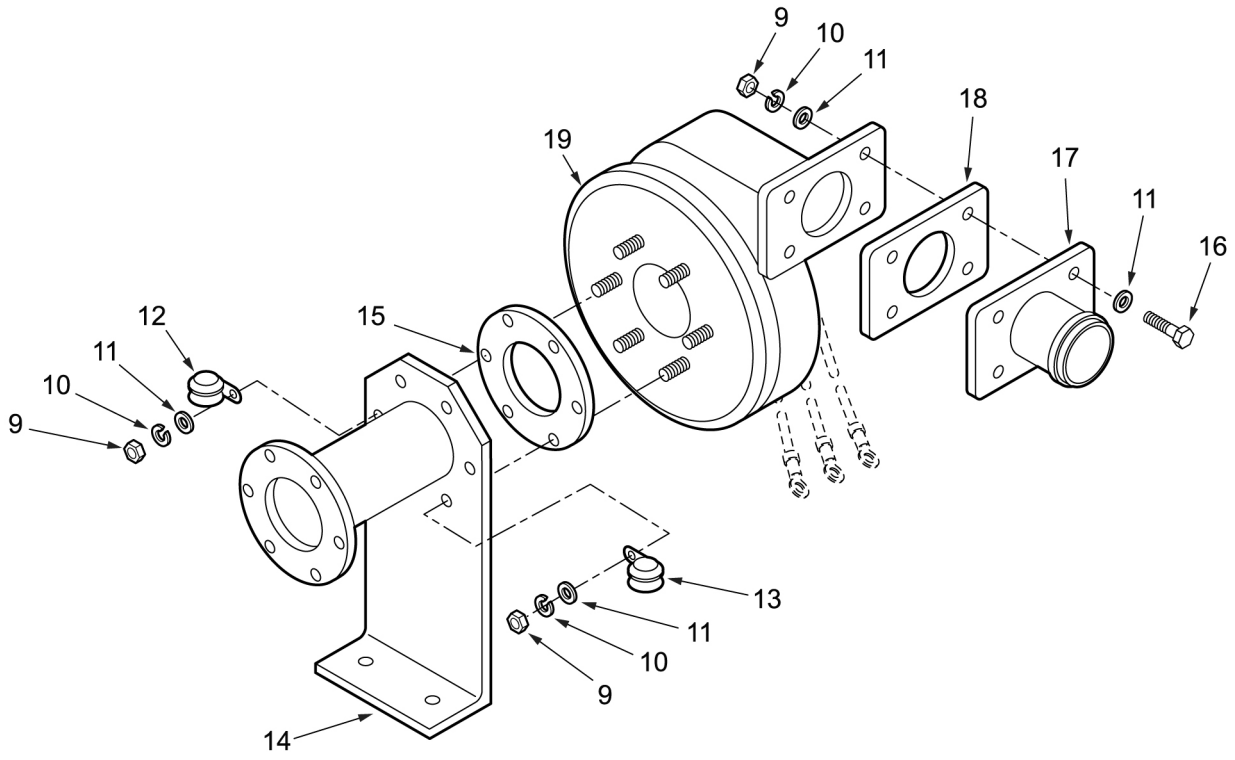


Figure 24. Combustion Fan and Mount Assembly (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 05 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0501 COMBUSTION FAN AND MOUNT ASSEMBLY FIGURE 24 Combustion Fan and Mount Assembly	
1	PAFZZ	4730-00-908-6292	58536	A-A-52506-F-48	CLAMP,HOSE	2
2	MFFZZ		90598	60593-1	HOSE, NOMETALLIC MAKE FROM P/N 5510K23, CAGEC 39428, CUT TO 30.00 INCHES	1
3	PAFZZ	5310-00-903-5966	96906	MS51971-1	NUT, PLAIN HEXAGON	2
4	PAFZZ	5310-00-933-8121	26196	004-003005-020	WASHER, LOCK	2
5	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	4
6	PAFZZ	5305-00-068-0508	07482	1C817P63	SCREW, CAP, HEXAGON HEAD	2
7	MFFZZ	5330-00-550-0303	90598	60584-1	GASKET MAKE FROM P/N 8635K542,CAGEC 39428 CUT TO FIT ..	1
8	PBFFZ	4140-01-497-1840	90598	60533-100	FAN VANEAXIAL COMBUSTION AIR .	1
9	PAFZZ	5310-00-903-5966	96906	MS51971-1	.NUT, PLAIN HEXAGON	10
10	PAFZZ	5310-00-933-8121	26196	004-003005-020	.WASHER, LOCK	10
11	PAFZZ	5310-00-582-5677	80205	MS15795-810	.WASHER, FLAT	14
12	PAFZZ	5340-00-702-2848	80205	MS21333-128	.CLAMP, LOOP	1
13	PAFZZ	5340-00-067-3868	80205	MS21333-109	.CLAMP, LOOP	1
14	XBFZZ		90598	60583-100	.BRACKET, FAN MOUNT	1
15	MFFZZ	5330-00-550-0303	90598	60584-1	.GASKET MAKE FROM P/N 8635K542, CAGEC 39428 CUT TO FIT ..	1
16	PAFZZ	5305-00-068-0508	07482	1C817P63	.SCREW, CAP, HEXAGON	4
17	XBFZZ		90598	60592-100	.ADAPTER, COMBUSTION	1
18	MFFZZ	5330-01-545-4147	90598	60588-1	.GASKET MAKE FROM P/N 8635K542, CAGEC 39428 CUT TO FIT ..	1
19	XBFZZ		75511	117313-00	.FAN ASSEMBLY	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 05 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

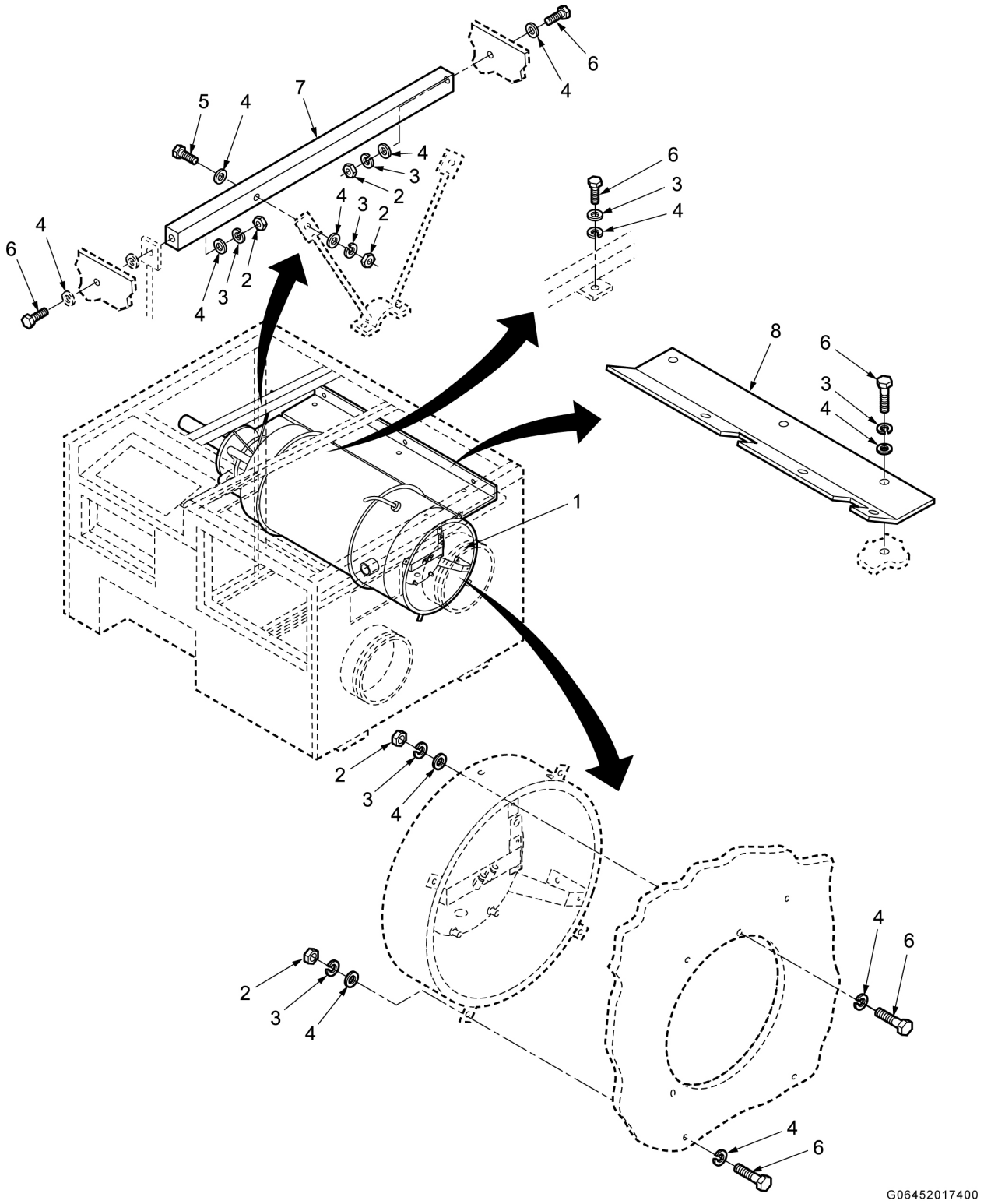


Figure 25. Heat Exchanger Assembly (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

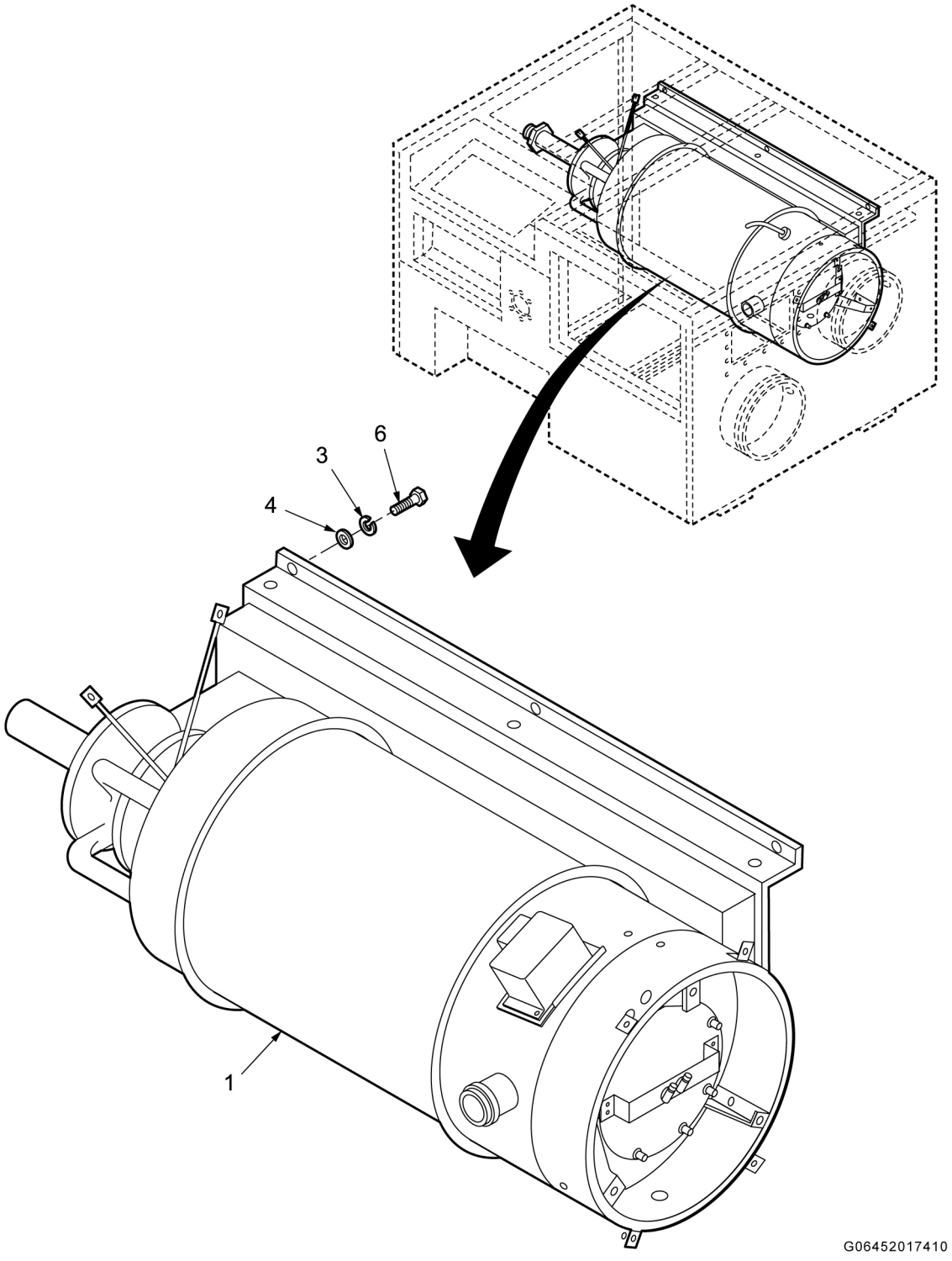
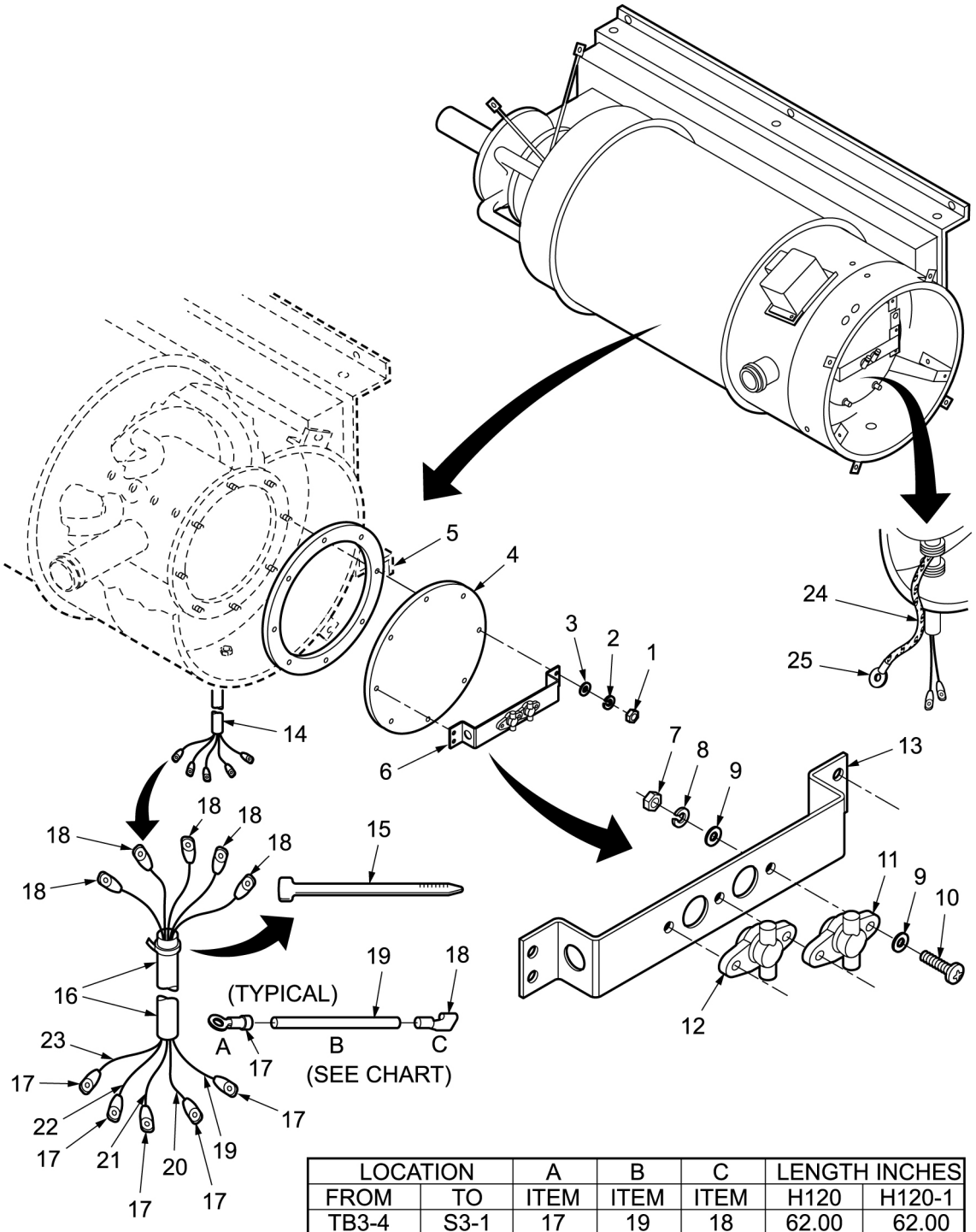


Figure 25. Heat Exchanger Assembly (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 06 HEAT EXCHANGER ASSEMBLY	
					FIGURE 25 Heat Exchanger Assembly	
1	XBFFF		80063	01G740162	HEAT EXCHANGER ASSY.....	1
					UOC: YKR	
1	XBFFF		80063	01G740163	HEAT EXCHANGER ASSY.....	1
					UOC: LPL	
2	PAFZZ	5310-00-767-0445	96906	MS51971-2	.NUT, PLAIN, HEXAGON	11
3	PAFZZ	5310-00-933-8121	26196	004-003005-020	WASHER, LOCK.....	24
					UOC: YKR	
3	PAFZZ	5310-00-933-8121	26196	004-003005-020	.WASHER, LOCK.....	24
					UOC: LPL	
4	PAFZZ	5310-00-582-5677	80205	MS15795-810	.WASHER, FLAT	31
5	PAFZZ	5305-00-071-2505	80204	B1821BH025C088N	.SCREW, CAP, HEXAGON HEAD	2
6	PAFZZ	5305-00-068-0508	07482	1C817P63	.SCREW, CAP, HEXAGON HEAD	22
					UOC: YKR	
6	PAFZZ	5305-00-068-0508	07482	1C817P63	.SCREW, CAP, HEXAGON HEAD	22
					UOC: LPL	
7	XBFZZ		90598	60642-1	.SUPPORT, HEAT EXCHANGER	1
8	XBFZZ		90598	60597-1	.SHIELD, HEAT EXCHANGER	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)



LOCATION		A	B	C	LENGTH INCHES	
FROM	TO	ITEM	ITEM	ITEM	H120	H120-1
TB3-4	S3-1	17	19	18	62.00	62.00
S3-3	TB3-5	17	20	18	60.00	60.00
TB3-8	S2-1	17	21	18	61.00	61.00
S2-3	TB3-9	17	22	18	65.00	65.00
S2-2	TB3-10	17	23	18	62.00	61.00

Figure 26. Cover Plate and Thermostat Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0601 and 0602 COVER PLATE AND THERMOSTAT ASSEMBLY	
					FIGURE 26 Cover Plate and Thermostat Assembly.	
1	PAFZZ	5310-00-250-9477	65597	930000-0204	.NUT, PLAIN HEXAGON	8
2	PAFZZ	5310-00-933-8120	80205	MS35338-138	.WASHER, LOCK.....	8
					UOC: YKR	
2	PAFZZ	5310-00-934-0226	80205	MS35338-153	.WASHER, LOCK.....	8
					UOC: LPL	
3	PAFZZ	5310-00-582-5677	80205	MS15795-810	.WASHER, FLAT	8
4	XBFFF		90598	60517-100	.PLATE, COVER	1
5	MFFZZ		90598	60518-1	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 10.16 OD X 7.63 ID	1
6	PAFFZ	6685-01-496-9950	90598	60441-100	.THERMOSTAT FLOW CONTROL	1
7	PAFZZ	5310-00-275-9310	80205	MS35649-83	..NUT, PLAIN HEXAGON	3
8	PAFZZ	5310-00-933-8119	80205	MS35338-137	..WASHER, LOCK	3
9	PAFZZ	5310-00-880-5978	06424	0770-8	..WASHER, FLAT	6
10	PFFZZ	5305-01-292-6306	96906	MS51492-07	..SCREW, MACHINE	3
11	PAFZZ	5930-01-399-2529	14859	20600D39-153	..SWITCH, THERMOSTATIC	1
12	PAFZZ	5930-01-289-7374	98752	8720699-1	..SWITCH, THERMOSTATIC	1
13	XBFZZ		90598	60531-1	..BRACKET, THERMOSTAT	1
14	XBFFF		90598	60440-100	..WIRING HARNESS	1
15	PAFZZ	5975-00-111-3208	81343	MS3367-5-9	...STRAP, TIE-DOWN, ELECT	1
16	MFFZZ		90598	60440-7	...SLEEVING,INSULATION MAKE FROM P/N M230535-109-0,CAGEC 81349, CUT TO 10 INCHES.....	1
17	PAFZZ	5940-00-283-5280	81343	MS25036-106	...TERMINAL, LUG	5
18	PAFZZ	5940-01-082-3321	25795	5X425	...TERMINAL, QUICK DISC	5
19	MFFZZ		90598	60440-2	...WIRE, ELECTRICAL MAKE FROMP/N M16878/17BJE9 , CAGEC 81349, CUT TO 60 INCHES	1
20	MFFZZ		90598	60440-1	...WIRE, ELECTRICAL MAKE FROM P/N M16878/17BJE9, CAGEC 81349, CUT TO 62 INCHES.....	1
21	MFFZZ		90598	60440-3	...WIRE, ELECTRICAL MAKE FROM P/N M16878/17BJE9 , CAGEC 81349, CUT TO 61 INCHES	1
22	MFFZZ		90598	60440-4	...WIRE, ELECTRICAL MAKE FROM P/NM16878/17BJE9, CAGEC 81349, CUT TO 62 INCHES	1
23	MFFZZ		90598	60440-5	...WIRE, ELECTRICAL MAKE FROM P/N M16878/17BJE9, CAGEC 81349, CUT TO 65 INCHES	1
24	MFFZZ		90598	60216-32	...WIRE, BRAID MAKE FROM P/N 8669, CAGEC 90816, CUT TO 16 INCHES	1
					UOC: LPL	
25	PAFZZ	5940-00-115-2674	96906	MS20659-108	.TERMINAL, LUG	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

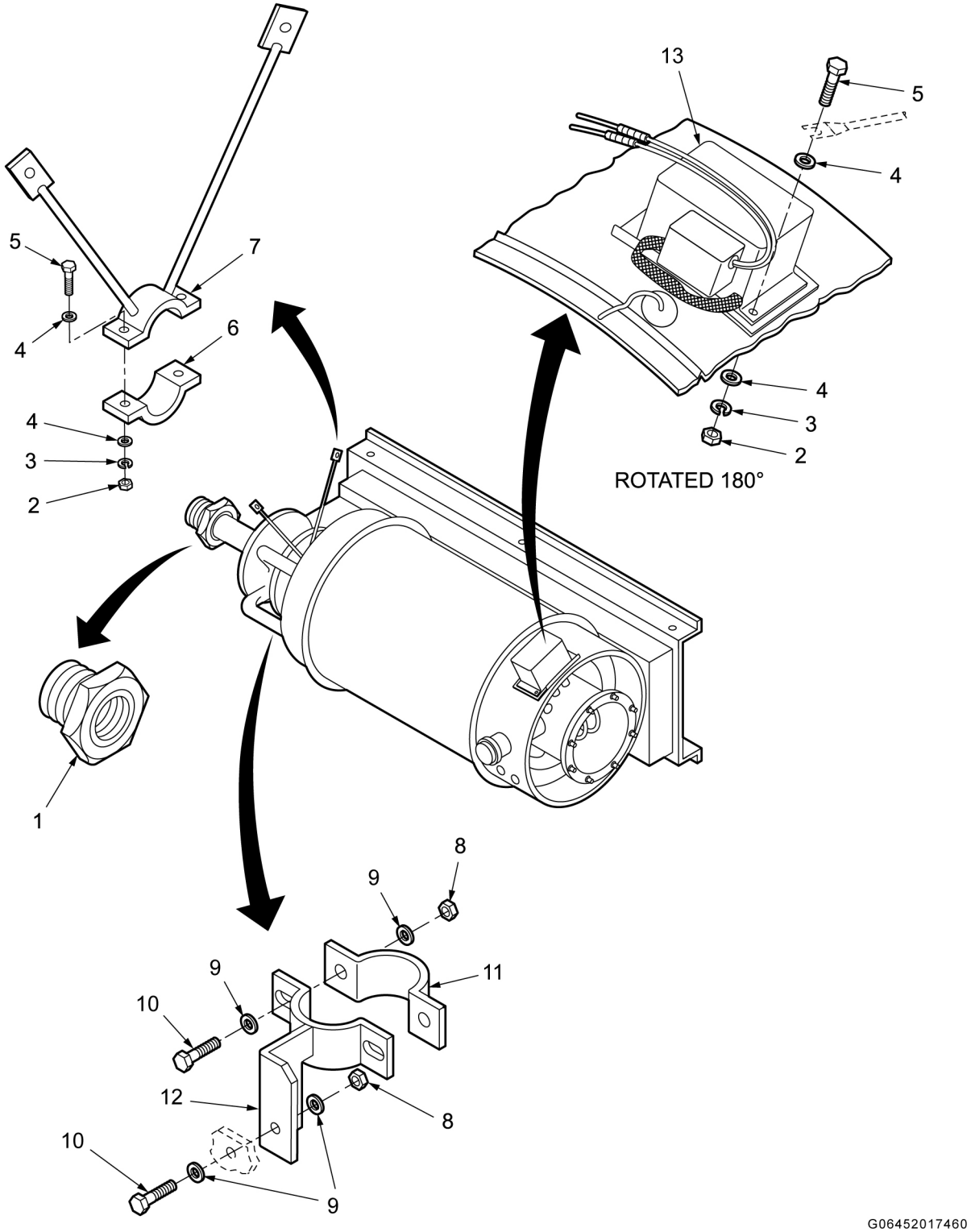


Figure 27. Transformer Assembly Models H-120 and H-120-1.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0603 and 0604 TRANSFORMER ASSEMBLY	
					FIGURE 27 Transformer Assembly Models H-120 and H-120-1.	
1	PAFZZ	9340-00-230-0441	01212	0271874/P-750	.WINDOW, OBSERVATION	4
2	PAFZZ	5310-00-903-5966	96906	MS51971-1	.NUT, PLAIN HEXAGON	4
					UOC: YKR	
2	PFFZZ	5310-00-761-6882	96906	MS51967-2	.NUT, PLAIN HEXAGON	4
					UOC: LPL	
3	PAFZZ	5310-00-933-8121	26196	004-003005-020	.WASHER, LOCK	4
					UOC: YKR	
3	PAFZZ	5310-00-582-5965	06845	HK799G16M	.WASHER, LOCK	4
					UOC: LPL	
4	PAFZZ	5310-00-933-8120	80205	MS35338-138	.WASHER, FLAT	8
					UOC: YKR	
4	PAFZZ	5310-00-809-4058	96906	MS27183-10	.WASHER, FLAT	8
					UOC: LPL	
5	PAFZZ	5305-00-225-3843	80204	B1821BH025C100N	.SCREW, CAP, HEXAGON HEAD	2
					UOC: YKR	
5	PAFZZ	5305-00-225-3839	80205	MS90725-8	.SCREW, CAP, HEXAGON HEAD	2
					UOC: LPL	
6	XBFZZ		90598	60539-1	.CLAMP	1
7	XBFZZ		90598	60554-100	.SUPPORT, HEAT EXCHANGER	1
8	PAFZZ	5310-00-934-9760	80205	MS35649-204	.NUT, PLAIN HEXAGON	6
9	PAFZZ	5310-00-615-1556	80205	MS15795-846	.WASHER, FLAT	12
10	PAFZZ	5305-01-342-5174	96906	MS51849-74C	.SCREW, MACHINE	6
11	XBFZZ		90598	60524-100	.CLAMP, WELDMENT	2
12	XBFZZ		90598	60524-1	.SADDLE	2
13	PAFZZ	5950-01-397-7319	90598	60444-100	.TRANSFORMER, POWER	1
					UOC: YKR	
13	PAFZZ	5950-01-483-5396	90598	60227-100	.TRANSFORMER, POWER	1
					UOC: LPL	
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

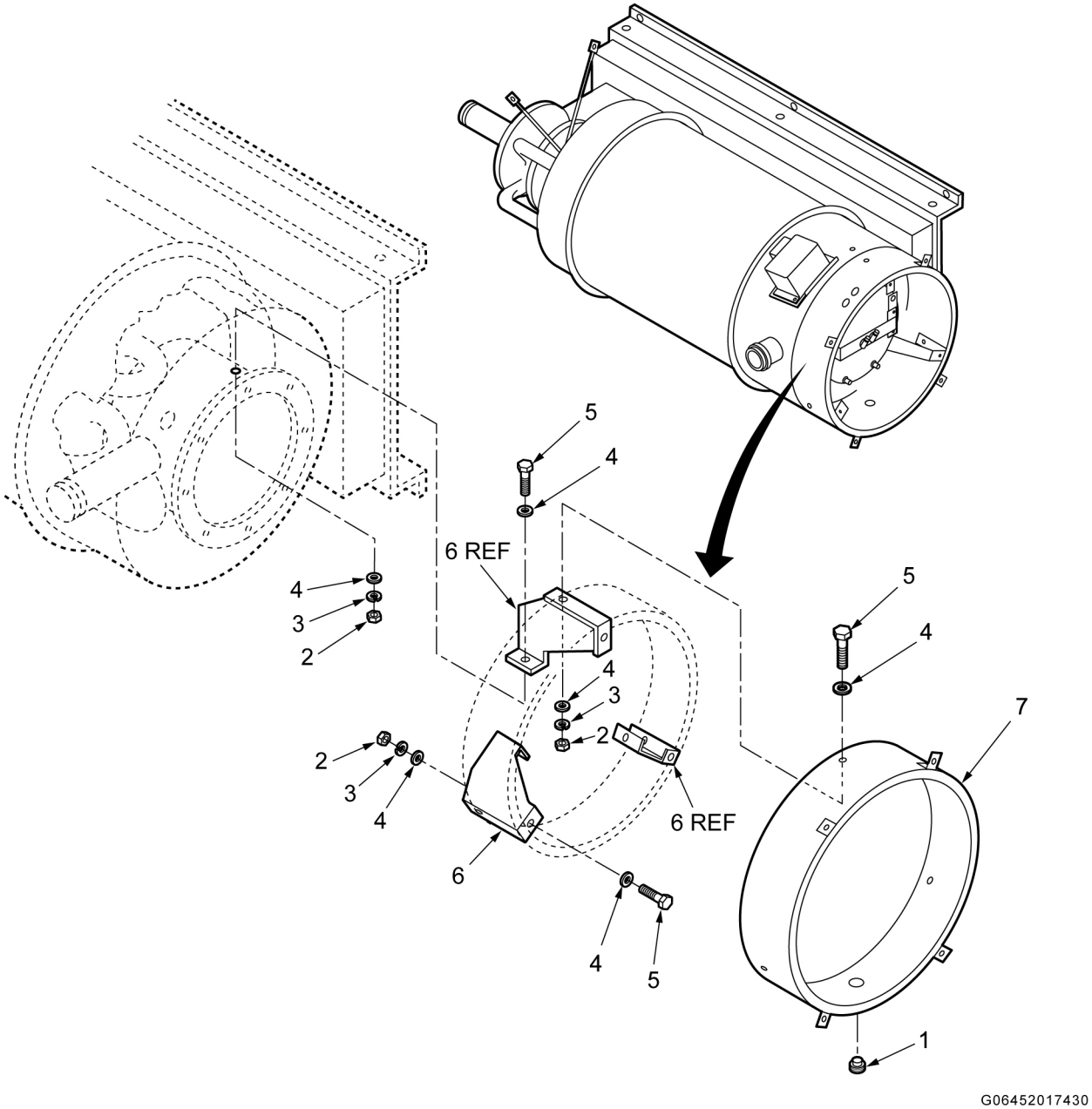


Figure 28. Heat Exchanger Models H-120 and H-120-1 (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

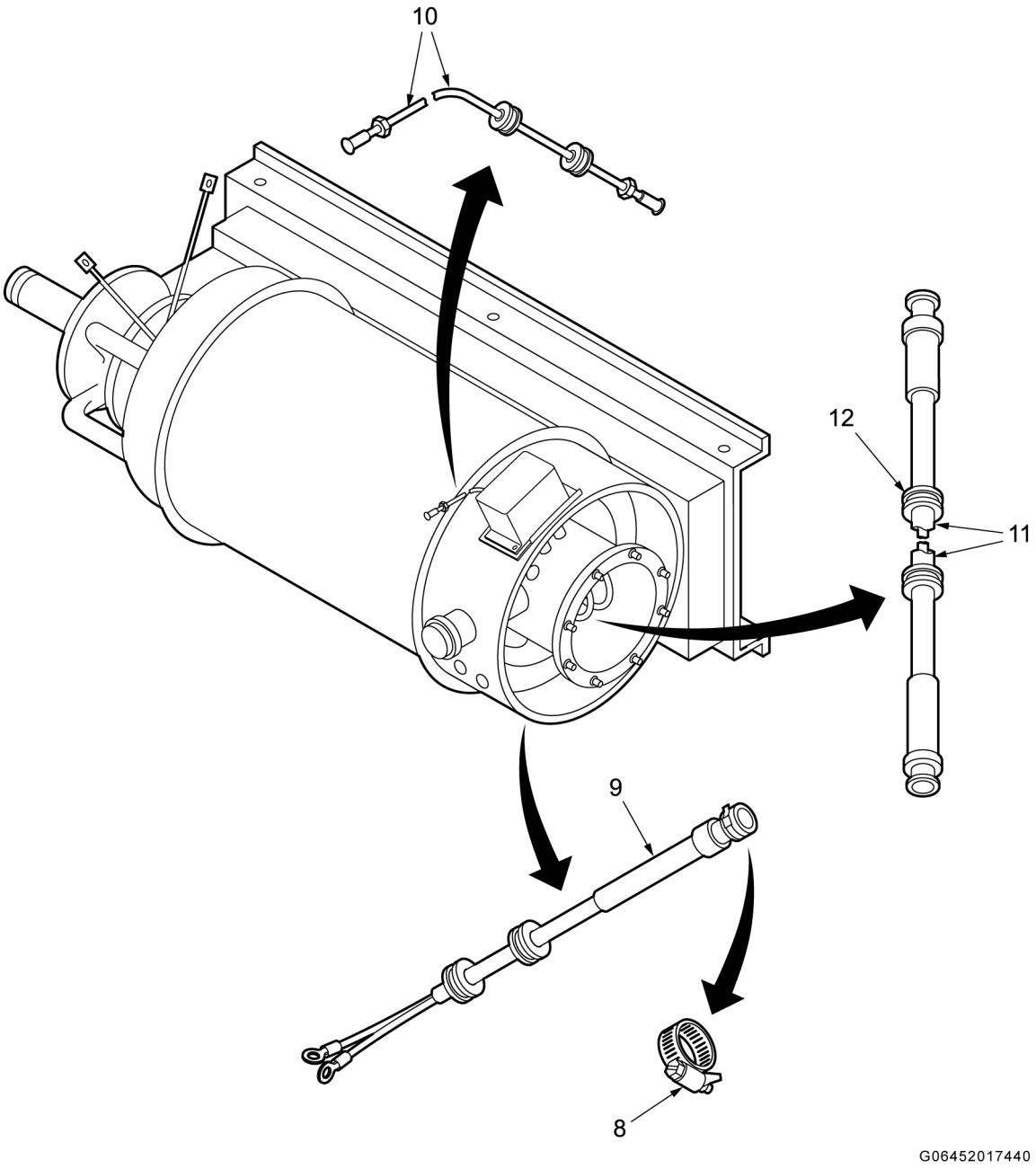


Figure 28. Heat Exchanger Models H-120 and H-120-1 (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0605 and 0606 HEAT EXCHANGER MODELS H-120 AND H-120-1	
					FIGURE 28 Heat Exchanger Models H-120 and H-120-1	
1	PAFZZ	5325-00-291-9366	96906	MS35489-11	.GROMMET, NONMETALLIC	1
2	PAFZZ	5310-00-767-0445	96906	MS51971-2	.NUT, PLAIN, HEXAGON	6
3	PAFZZ	5310-00-933-8121	26196	004-003005-020	.WASHER, LOCK.....	6
					UOC: YKR	
3	PAFZZ	5310-00-582-5965	06845	HK799G16M	.WASHER, LOCK.....	6
					UOC: LPL	
4	PAFZZ	5310-00-582-5677	80205	MS15795-810	.WASHER, FLAT	12
					UOC: YKR	
4	PAFZZ	5310-00-809-4058	96906	MS27183-10	.WASHER, FLAT	12
					UOC: LPL	
5	PAFZZ	5305-00-068-0508	07482	1C817P63	.SCREW, CAP, HEXAGON HEAD	6
					UOC: YKR	
5	PAFZZ	5305-00-068-0502	80205	NASM90725	.SCREW, CAP, HEXAGON HEAD	6
					UOC: LPL	
6	XBFZZ		90598	60595-1	.BRACKET, HEAT EXCHANGER.....	3
					UOC: YKR	
6	XBFZZ		90598	60218-1	.BRACKET, HEAT EXCHANGER.....	3
					UOC: LPL	
7	XBFZZ		90598	60598-100	.RING, MOUNTING	1
8	PAFZZ	4730-00-908-3194	58536	A-A-52506-F-12	.CLAMP, HOSE	1
					UOC: YKR	
8	XDFZZ		06034	5801257	.CLAMP, HOSE	1
					UOC: LPL	
9	PAFZZ	5961-01-498-2591	90598	60414-100	.SEMICONDUCTOR DEVICE	1
10	PAFZZ	4710-01-497-5139	5RQL2	60480-100	.TUBE ASSEMBLY, METAL	1
					UOC: YKR	
10	XBFZZ		90598	60230-100	.TUBE ASSEMBLY.....	1
					UOC: LPL	
11	PAFZZ	6150-01-397-7320	90598	60412-100	.CABLE ASSEMBLY	2
12	PAFZZ	5325-01-104-4987	96906	MS35489-11X	.GROMMET, NONMETALLIC	2
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

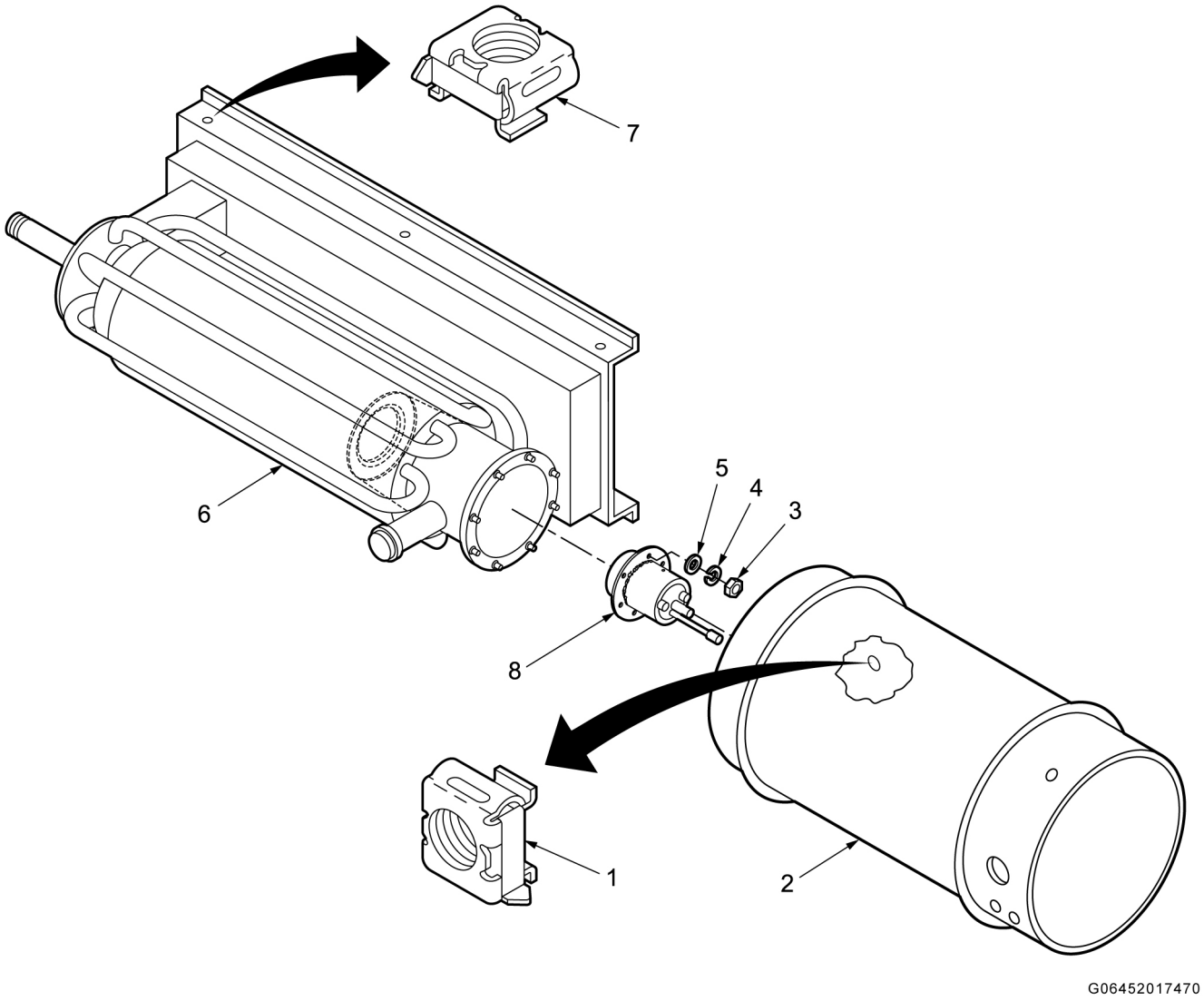


Figure 29. Burner Assembly (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

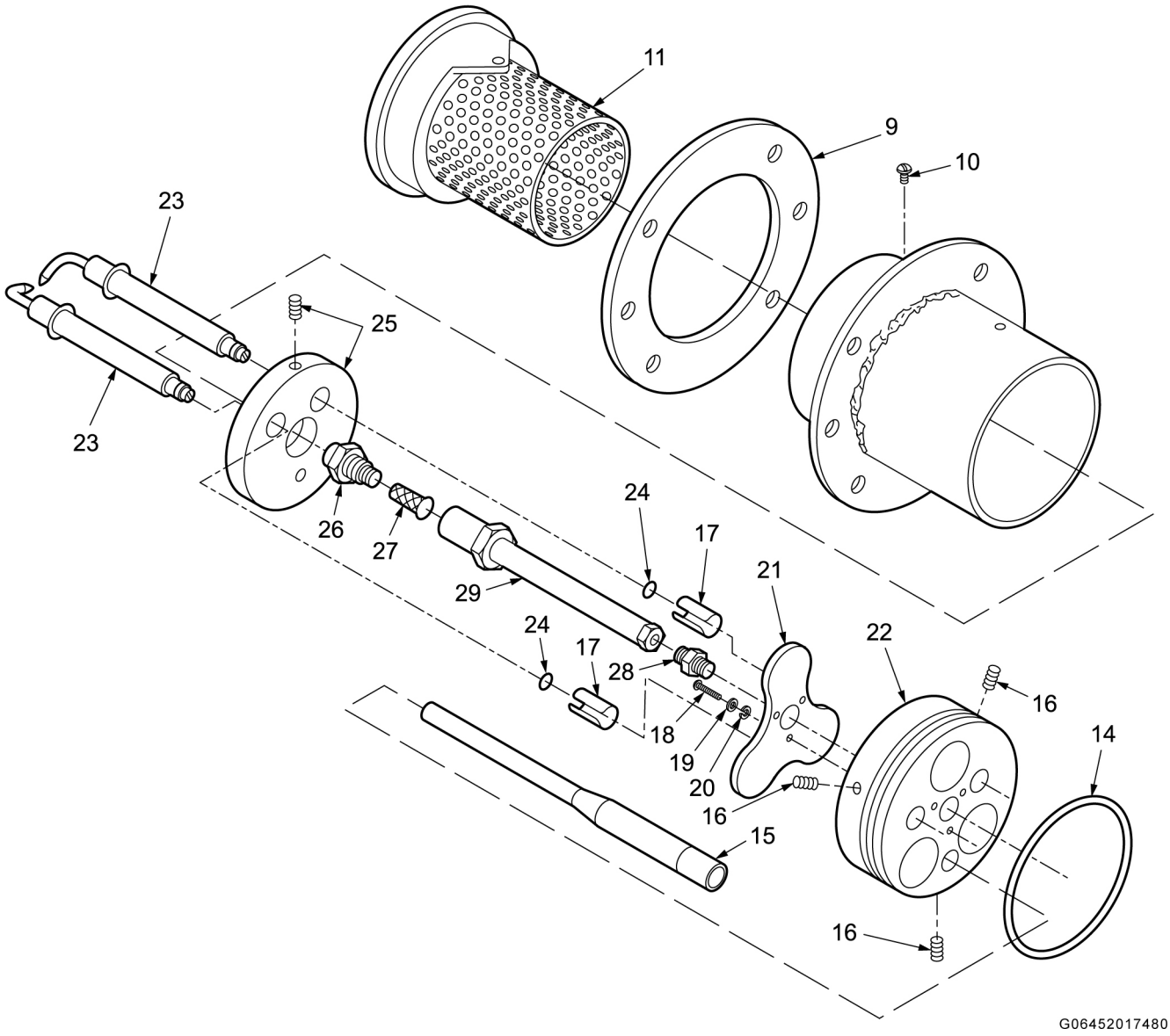


Figure 29. Burner Assembly (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0607 BURNER ASSEMBLY	
					FIGURE 29 Burner Assembly	
1	PAFZZ	5340-00-297-0312	78553	C7931-1420	.RETAINER, NUT AND BOLT	17
2	XBFZZ		90598	60599-1	.SHELL, HEAT EXCHANGER.....	1
					UOC: YKR	
2	XBFZZ		90598	60219-100	.SHELL, HEAT EXCHANGER.....	1
					UOC: LPL	
3	PAFZZ	5310-00-855-1102	80205	MS35649-2255B	.NUT, PLAIN HEXAGON	6
4	PAFZZ	5310-00-933-8121	26196	004-003005-020	.WASHER, LOCK.....	6
					UOC: YKR	
4	PAFZZ	5310-00-933-8121	26196	004-003005-020	.WASHER, LOCK.....	6
					UOC: LPL	
5	PAFZZ	5310-00-933-8120	80205	MS35338-138	.WASHER, LOCK.....	6
					UOC: YKR	
5	PAFZZ	5310-00-934-0226	80205	MS35338-153	.WASHER, LOCK.....	6
					UOC: LPL	
6	XBFFF		90598	60521-100	.HEAT EXCHANGER	1
7	PAFZZ	5340-00-297-0312	78553	C7988-1420	..RETAINER, NUT AND	9
8	PAFFA	4530-01-497-1860	90598	60701-100	.BURNER, GAS, HEATING	1
9	PAFZZ	5330-01-398-9728	90598	60717-1	..GASKET	1
10	PAFZZ	5305-00-765-4257	80205	MS51959-43	..SCREW, MACHINE	1
11	XBFZZ		90598	60707-100	..FIRE RING ASSEMBLY	1
12	PAFZZ	5305-00-088-9520	53711	752-6405276	..SETSCREW	3
13	XBFZZ		90598	60740-100	..TUBE AND FLANGE	1
14	PAFZZ	5331-01-329-9654	8L582	OR-239-1511-549	..O-RING	1
15	XBFZZ		90598	60710-100	..TUBE ASSEMBLY	1
16	PAFZZ	5305-00-724-5851	80205	MS51029-53	..SETSCREW	3
17	PAFZZ	5975-01-092-8655	50340	12408	..BUSHING, ELECTRICAL	2
18	PAFZZ	5305-00-054-6650	96906	MS51957-26	..SCREW, MACHINE	3
19	PAFZZ	5310-00-929-6395	80205	MS35338-136	..WASHER, LOCK	3
20	PAFZZ	5310-00-722-5998	80205	MS15795-805	..WASHER, FLAT	3
21	PAFZZ	4520-01-399-1406	90598	60712-1	..PETAL VALVE, HEATER	1
22	XBFZZ		90598	60709-1	..BLOCK	1
23	PAFZZ	5977-01-544-6774	98255	60731-100	..ELECTRODE	2
24	PAFZZ	5331-01-410-8140	76385	0-1290/056762	..O-RING	2
25	XBFZZ		90598	60702-100	..BAFFLE CENTERING	1
26	PAFZZ	4530-01-399-2423	71895	1.25GPH80W	..OIL NOZZLE	1
27	PAFZZ	4330-01-399-2425	5H185	45560-1	..FILTER, ELEMENT FLUID	1
28	PAFZZ	4730-00-187-0839	81343	AS4842/1	..ADAPTER, STRAIGHT, PIPE	1
29	PBFZZ	4710-01-398-8364	90598	60734-100	..TUBE ASSEMBLY, METAL	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 06 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 07

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 07 - (CONTINUED)

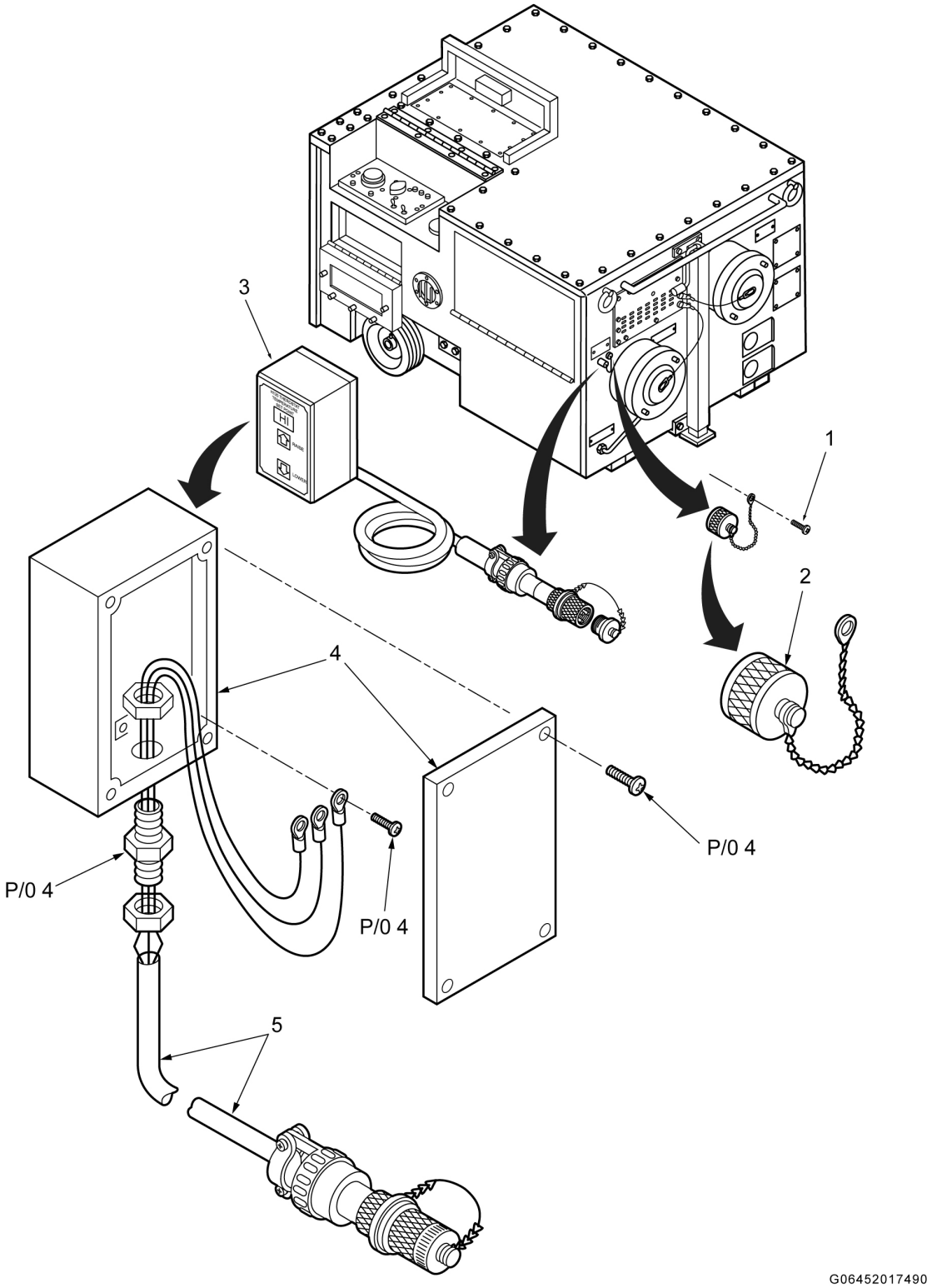


Figure 30. Remote Control Thermostat and Cable (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 07 - (CONTINUED)

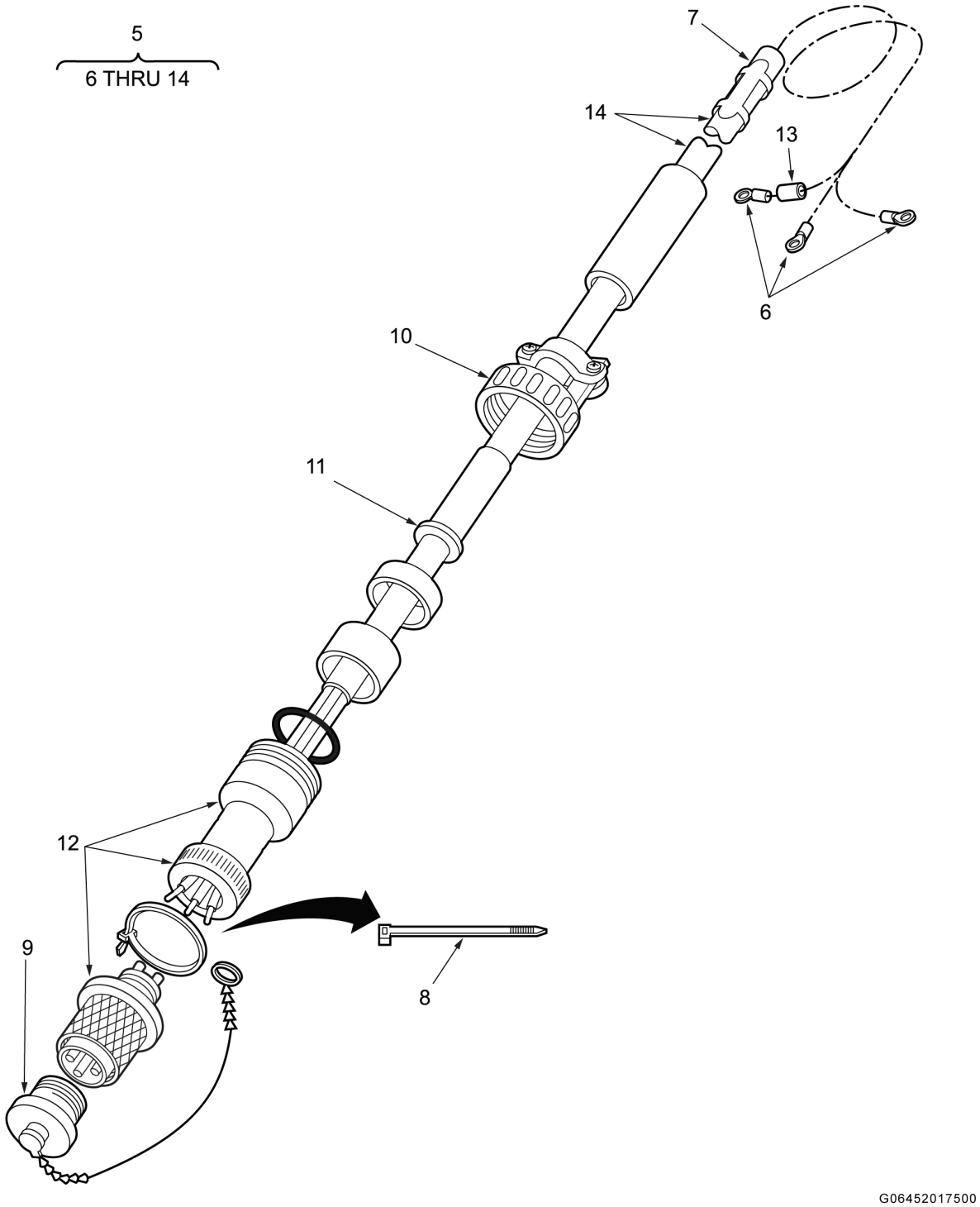


Figure 30. Remote Control Thermostat and Cable (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 07 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0701 and 0702 REMOTE CONTROL THERMOSTAT AND CABLE	
					FIGURE 30 Remote Control Thermostat and Cable	
1	PAFZZ	5320-00-343-5435	07707	AD43AH	RIVET, BLIND	1
2	PAFZZ	5935-01-181-6651	96906	MS25043-14DA	COVER, ELECTRICAL CONNECTOR	1
3	PAFFZ	5930-01-497-6852	90598	60410-100	SWITCH, THERMOSTATIC ASSEMBLY.....	1
4	PAFZZ	6685-01-398-7371	90598	60404-1	.THERMOSTAT	1
5	XBFFF		90598	60411-100	.THERMOSTAT CABLE ASSEMBLY ...	1
6	PAFZZ	5940-00-283-5280	81343	MS25036-106	..TERMINAL, LUG	3
7	PAFZZ	5975-00-223-7543	96906	MS3368-4-9D	..STRAP, TIE-DOWN	1
8	PAFZZ	5975-00-111-3208	81343	MS3367-5-9	..STRAP, TIE-DOWN, ELECTRICAL ..	1
9	PAFZZ	5935-01-175-8420	96906	MS25042-14DA	..COVER, ELECTRICAL CONNECTOR.....	1
10	PAFZZ	5935-01-172-9912	81343	M85049/11-17W	..BACKSHELL, ELECTRICAL	1
11	PAFZZ	5975-01-428-6574	96906	MS3420-8	..BUSHING ELECTRICAL	1
12	PAFZZ	5935-01-025-2139	96906	MS3406D14S-7P	..CONNECTOR, PLUG ELECTRICAL .	1
13	XDFZZ		14304	E29-0003-002	..BAND, MARKER	3
14	MFFZZ		90598	60411-7	..CABLE,ELECTRICAL MAKE FROM P/N CO-03HOF(3/16) 0435, CAGEC 81349, CUT TO 310 INCHES).....	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 07 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 08

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 08 - (CONTINUED)

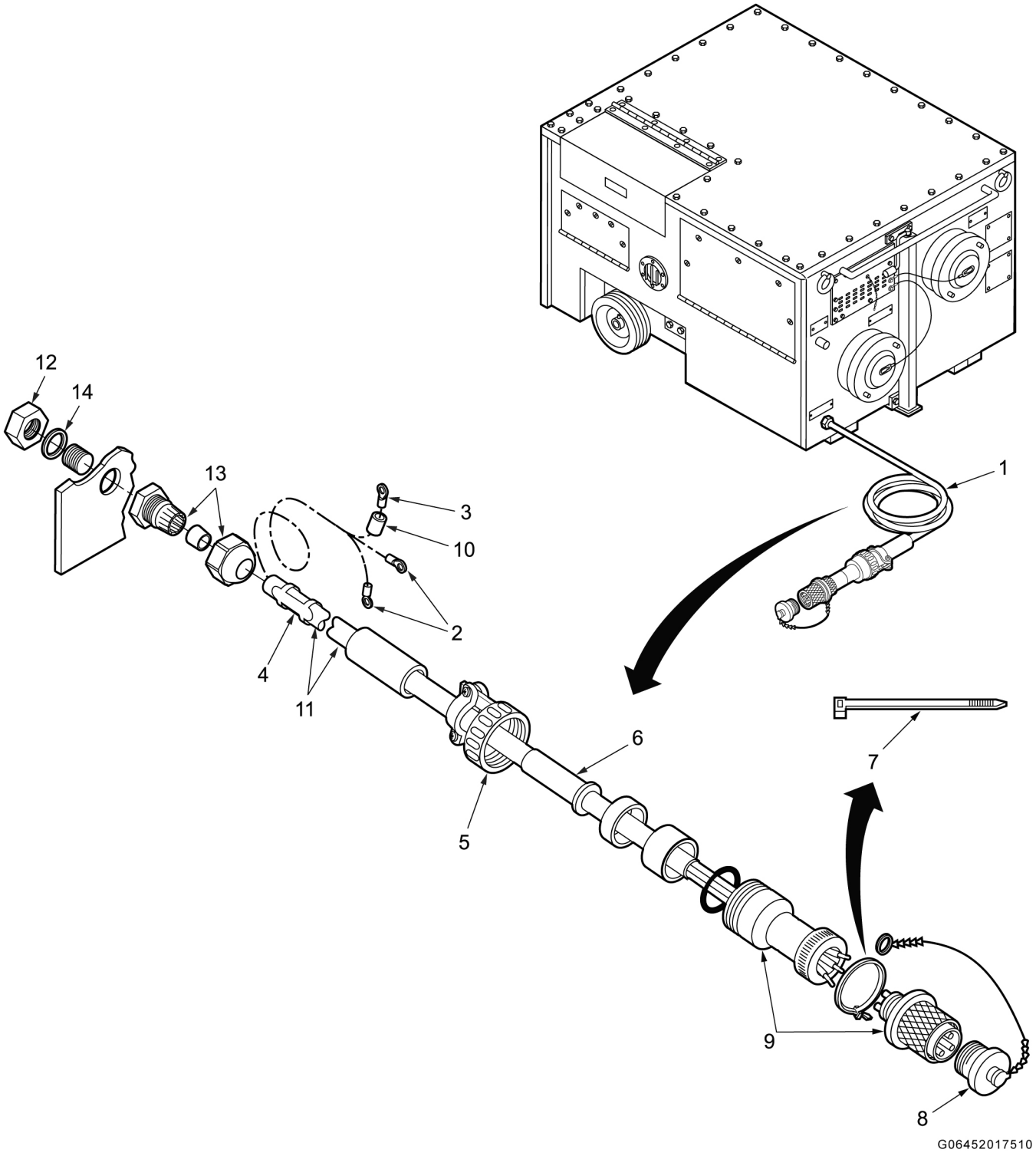


Figure 31. Power Cable Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 08 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 08 POWER CABLE ASSEMBLY	
					FIGURE 31 Power Cable Assembly.	
1	XBFFF		90598	60411-102	CABLE ASSEMBLY, POWER	1
2	PAFZZ	5940-00-204-8990	75037	MNG10-6RX	.TERMINAL ,LUG	2
3	PAFZZ	5940-00-143-4777	00779	320569	.TERMINAL, LUG	1
4	PAFZZ	5975-00-223-7543	96906	MS3368-4-9D	.STRAP, TIE-DOWN	1
5	PAFZZ	5935-01-159-3706	81343	AS85049/11	.BACKSHELL, ELECTRICAL CLAMP .	1
6	PAFZA	5935-00-415-4043	18876	10182089	.CONNECTOR,PLUG, ELEC NONMETALIC	1
7	PAFZZ	5975-00-111-3208	81343	MS3367-5-9	.STRAP, TIE-DOWN, ELECTRICAL ...	1
8	PAFZZ	5935-01-189-3220	96906	MS25042-16DA	.COVER, ELECTRICAL CONNECTOR	1
9	XAFZZ		81343	AS50151	.CONNECTOR, PLUG ELECTRICAL .	1
10	XBFZZ		85480	HHSCP.9-6676W	.MARKER, WIRE	3
11	MFFZZ		90598	60411-17	.CABLE, ELECTRICAL MAKE FROM P/N CO-03HOF(3/12) 0635, CAGEC 81349, CUT TO 416 INCHES	1
12	PAFZZ	5975-01-400-0600	28520	2251	LOCKNUT	1
13	PAFZA	5975-01-364-5613	28520	3234	BOX CONNECTOR, ELECTRICAL	1
14	PAFZZ	5331-01-398-4995	81343	AS9955-023	O-RING	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 08 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 09

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 09 - (CONTINUED)

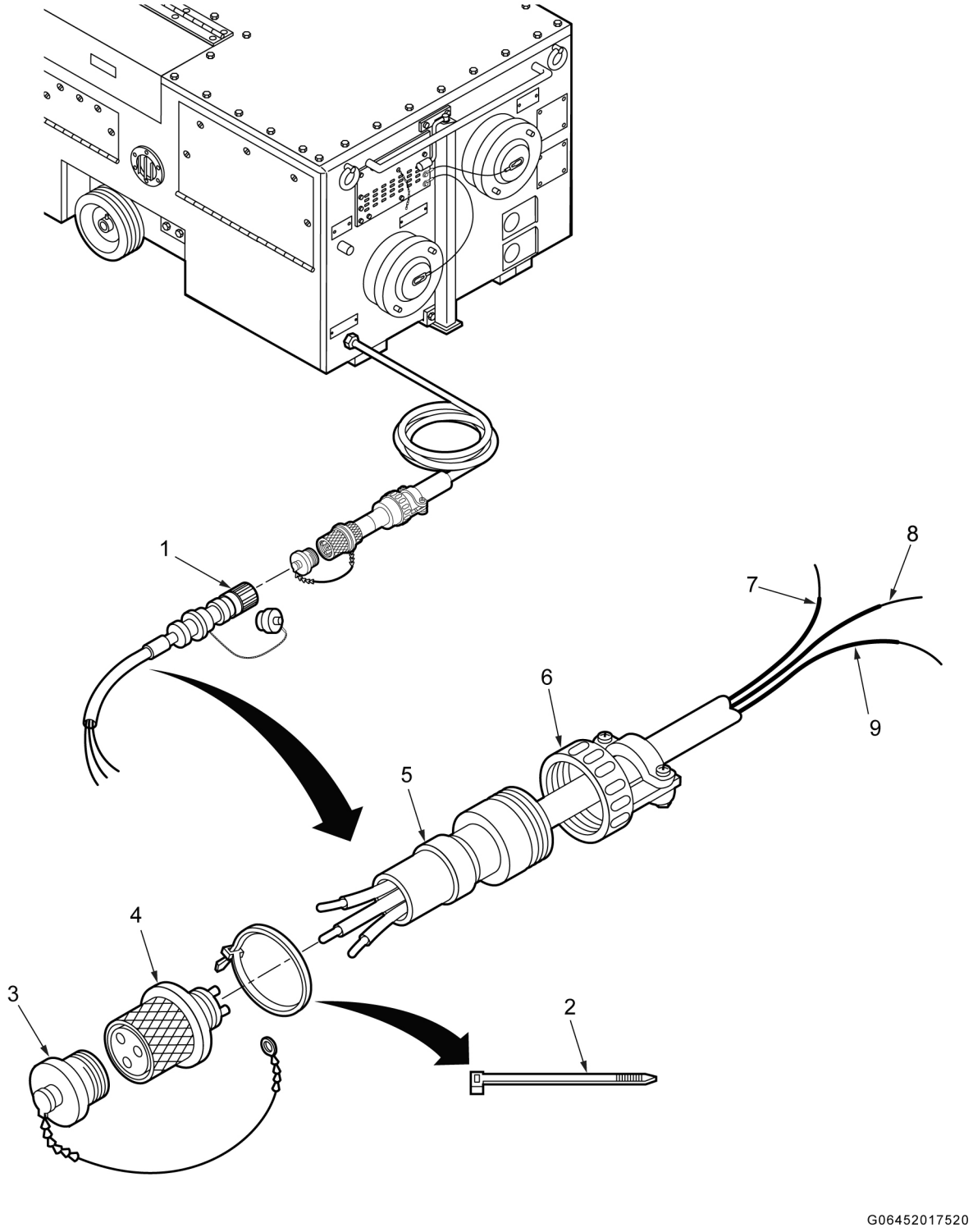


Figure 32. External Power Cable Adapter Cord.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 09 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 09 EXTERNAL POWER CABLE ADAPTER CORD FIGURE 32 External Power Cable Adapter Cord.	
1	PAFFZ	6150-01-335-3449	97403	13229E8567	LEAD ASSEMBLY, ELECTRICAL	1
2	PAFZZ	5975-00-111-3208	81343	MS3367-5-9	.STRAP, TIE-DOWN, ELECTRICAL ...	1
3	PAFZZ	5935-01-184-7188	96906	MS25043-16DA	.COVER, ELECTRICAL CONNECTOR	1
4	PAFZZ	5935-01-397-9876	96906	MS3401D16-10S	.CONNECTOR, RECEPTACLE, ELECTRICAL.....	1
5	PAFZZ	5365-00-820-4535	96906	MS3420-6	.BUSHING, NONMETALLIC	1
6	PAFZZ	5935-01-181-1670	81343	M85049/11-112W	.BACKSHELL, ELECTRICA L CONNECTOR.....	1
7	MFFZZ		97403	13229E8567-2	.WIRE, ELECTRICAL MAKE FROM P/N M5086-1-12-0,CAGEC 81343, CUT TO LENGTH	3
8	MFFZZ		97403	13229E8567-3	.WIRE, ELECTRICAL MAKE FROM P/N M5086-1-12-9, CAGEC 81343, CUT TO LENGTH	3
9	MFFZZ		97403	13229E8567-4	.WIRE, ELECTRICAL MAKE FROM P/N M5086-1-12-5, CAGEC 81343, CUT TO LENGTH	3
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 09 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 10

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 10 - (CONTINUED)

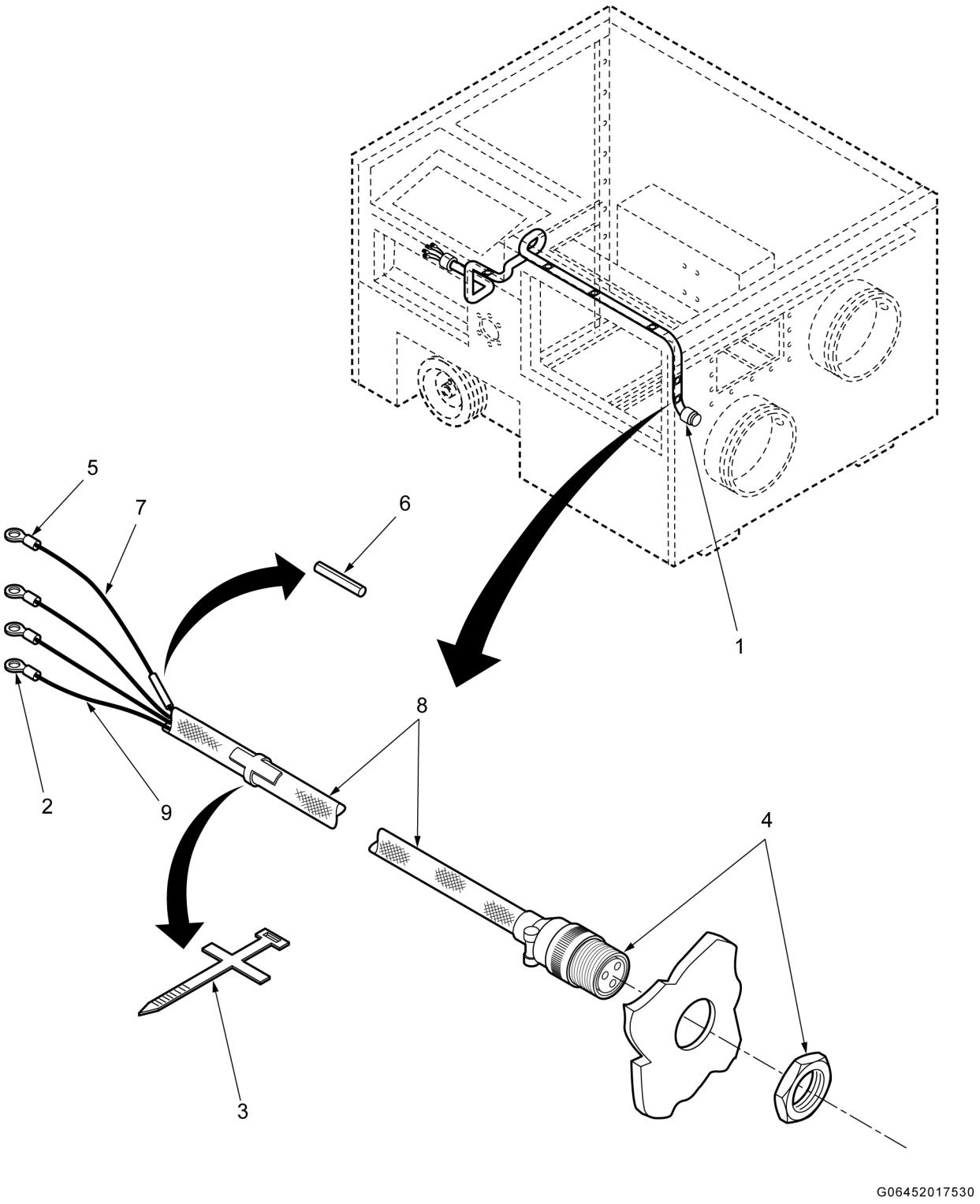


Figure 33. Internal Power Cable Adapter Cord (J3).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 10 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 10 INTERNAL POWER CABLE ADAPTER CORD (J3).	
					FIGURE 33 Internal Power Cable Adapter Cord (J3).	
1	PAFZA	6150-01-497-4406	90598	60411-101	CABLE ASSEMBLY, POWER	1
2	PAFZZ	5940-00-283-5280	81343	MS25036-106	.TERMINAL, LUG	3
3	XDFZZ		85480	HSCR9-6676W	.MARKER, WIRE	1
4	XBFZZ	5935-01-040-8019	96906	MS3404D14S7S	.CONNECTOR, RECEPTACLE CONNECTOR.....	1
5	PAFZZ	5940-00-143-4777	00779	320569	.TERMINAL, LUG	1
6	PAFZZ	5940-01-079-1936	81343	M7928/5-5	.SPLICE, CONDUCTOR	1
7	MFFZZ		90598	60411-23	.BRAID, WIRE MAKE FROM 6145-00-548-2920, CAGEC 70903, CUT TO 10 INCHES ..... UOC: LPL	1
8	MFFZZ		90598	60411-21	.BRAID, WIRE MAKE FROM 6145-00-548-2920, CAGEC 70903, CUT TO 53 INCHES ..... UOC: LPL	1
9	MFFZZ		90598	60411-9	.WIRE, ELECTRICAL MAKE FROM 6145-00-578-6072, CUT TO 165 INCHES	3
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 10 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 11

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 11 - (CONTINUED)

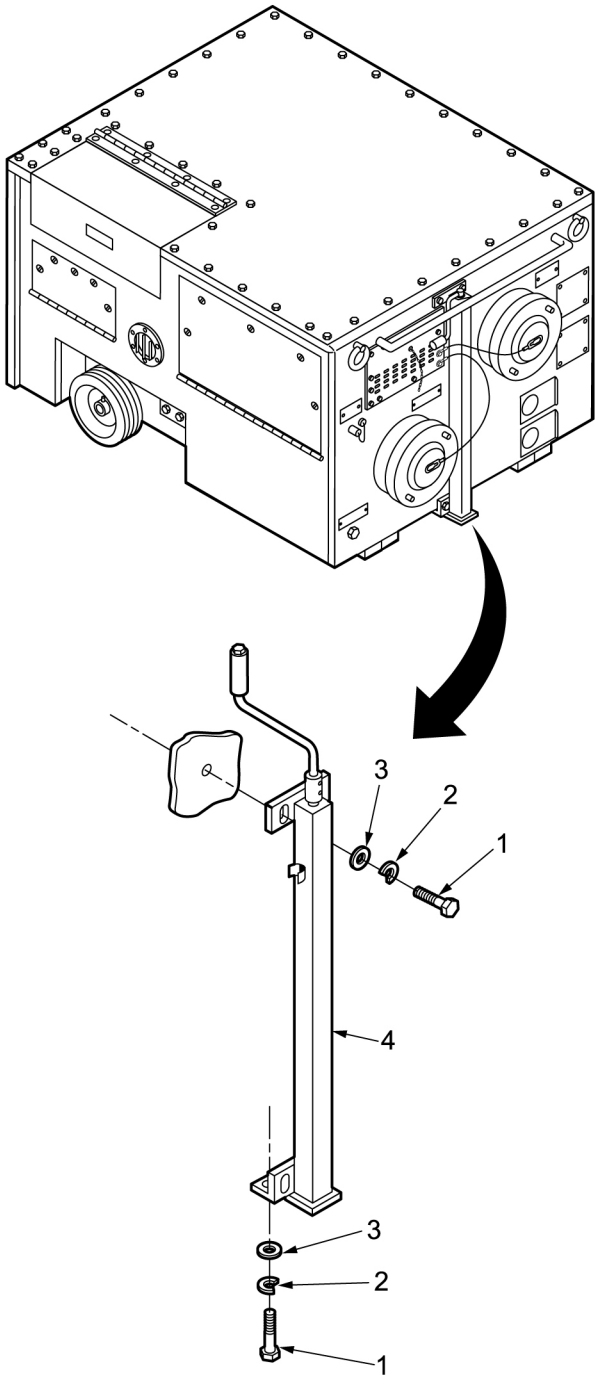


Figure 34. Jack Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 11 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1101 JACK ASSEMBLY FIGURE 34 Jack Assembly.	
1	PAFZZ	5305-00-071-2505	80204	B1821BH025C088N	SCREW, CAP, HEXAGON HEAD	5
2	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	5
3	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	5
4	XBFZZ		90598	60050-100	JACK ASSEMBLY	1
					UOC: YKR	
4	PAFZZ	5120-01-512-8935	98255	60225-1	JACK, LEVELING SUPPORT	1
					UOC: LPL	
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 11 - (CONTINUED)

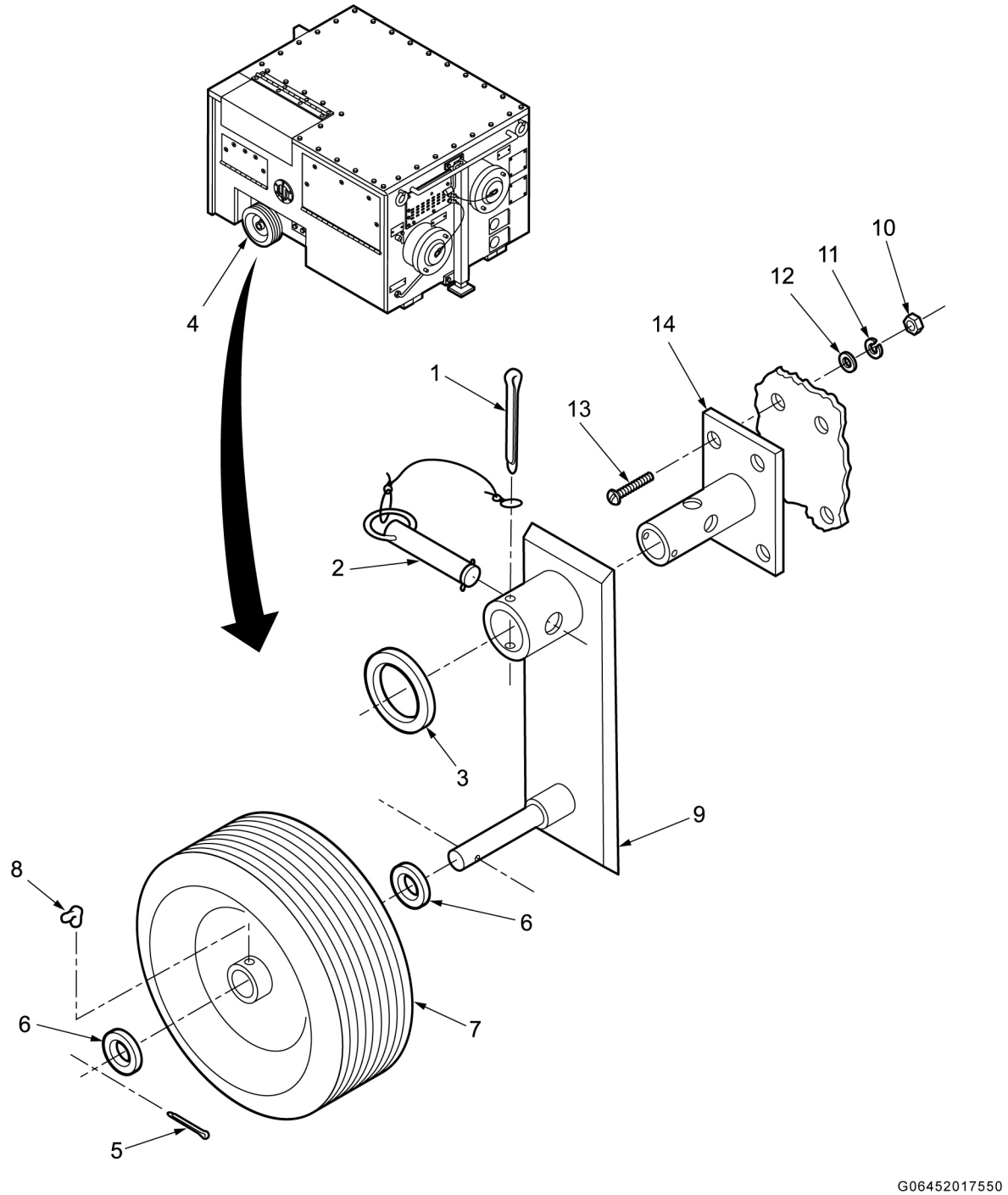


Figure 35. Wheel Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 11 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1102 WHEEL ASSEMBLY FIGURE 35 Wheel Assembly.	
1	PAFZZ	5315-00-059-0491	80205	MS24665-372	PIN, COTTER	2
2	PAFZZ	5315-01-400-5794	5RQL2	60104-100	PIN, QUICK RELEASE WIRE	2
3	PAFZZ	5310-01-399-1676	90598	60020-1	WASHER, FLAT MOUNT	2
4	XBFFF		90598	60611-100	WHEEL ASSEMBLY	2
5	PAFZZ	5315-00-187-9384	80205	MS24665-389	.PIN, COTTER	1
					UOC: YKR	
5	PAFZZ	5315-00-059-0491	80205	MS24665-372	.PIN, COTTER	1
					UOC: LPL	
6	PAFZZ	5310-00-614-3505	80205	MS15795-820	.WASHER, FLAT	2
					UOC: YKR	
6	PAFZZ	5310-00-823-8803	96906	MS27183-21	.WASHER, FLAT	2
					UOC: LPL	
7	PAFZZ	2530-01-497-0237	5RQL2	60274-1	.WHEEL	1
8	PBFZZ	4730-01-398-5667	11431	915	.FITTING, GREASE	1
9	XBFZZ		90598	60601-100	.ARM, RETRACTABLE	1
10	PAFZZ	5310-00-767-0445	96906	MS51971-2	.NUT, PLAIN, HEXAGON	8
11	PAFZZ	5310-00-974-6623	80205	MS35338-140	WASHER, LOCK	8
12	PAFZZ	5310-00-625-5756	80205	MS15795-812	WASHER, FLAT	8
13	PAFZZ	5305-00-763-7829	96906	MS51959-99	SCREW, MACHINE	8
14	XBFZZ		90598	60607-100	PIVOT, WHEEL	2
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 11 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 12

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 12 - (CONTINUED)

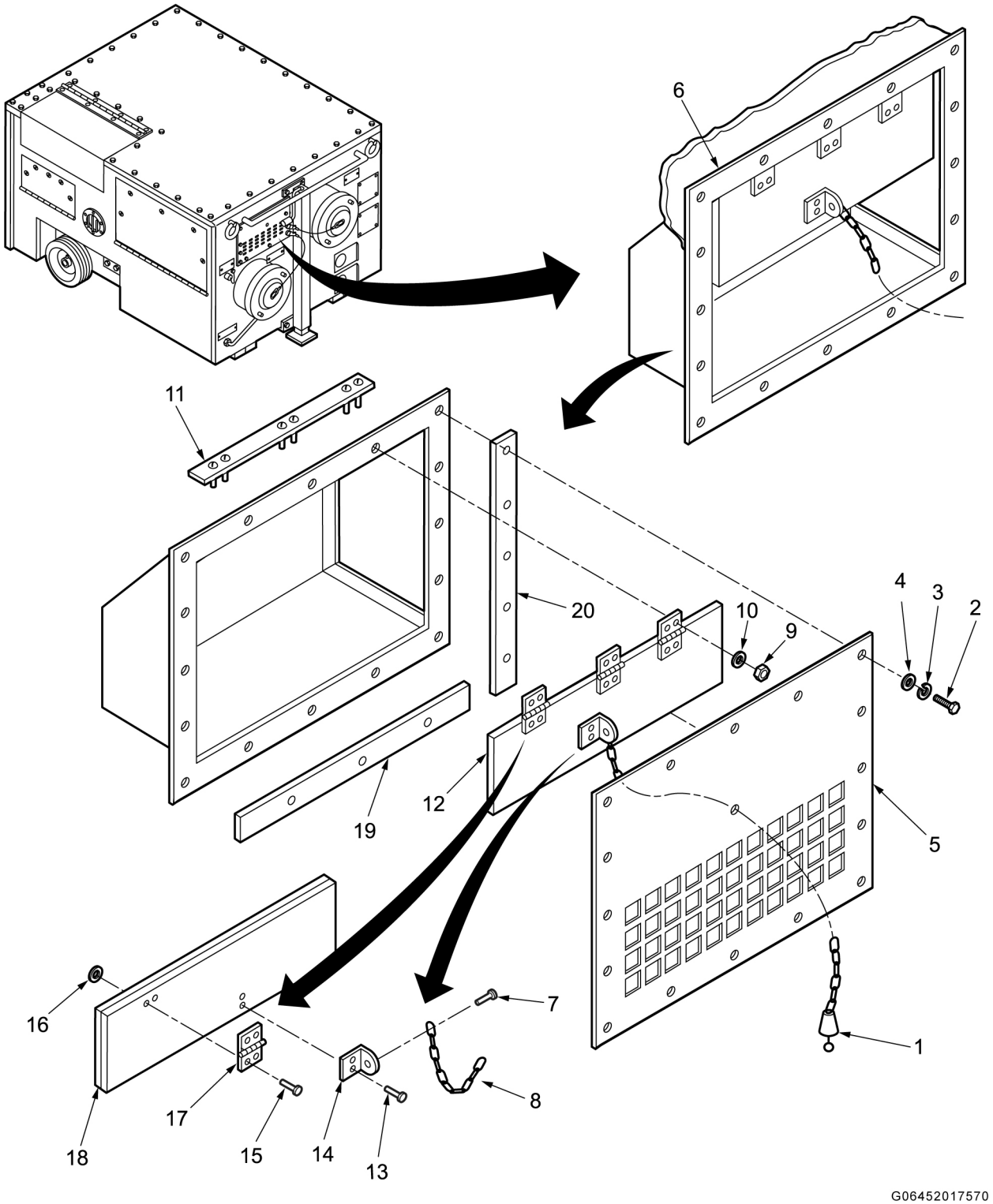


Figure 36. Damper Assembly (Sheet 1 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 12 - (CONTINUED)

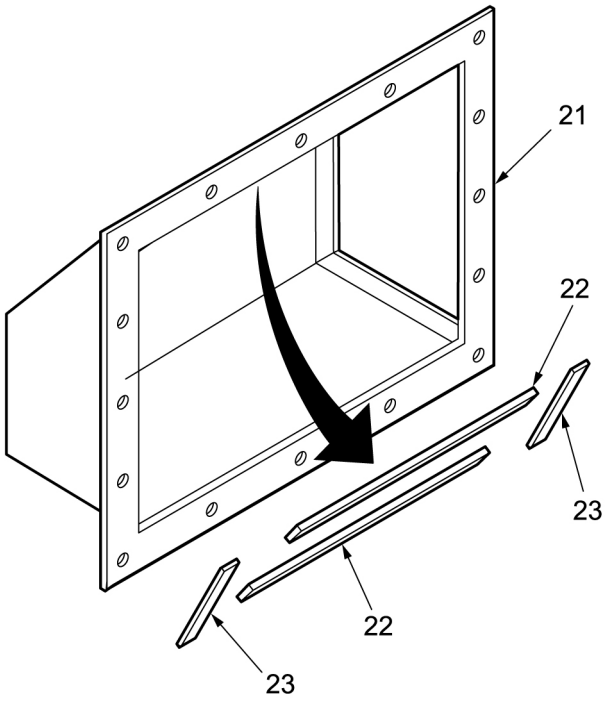


Figure 36. Damper Assembly (Sheet 2 of 2).

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 12 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1201 DAMPER ASSEMBLY FIGURE 36 Damper Assembly	
1	PAFZZ	4130-00-922-2439	60532	D4524-371	PENDANT WITH SLEEVE	1
2	PAFZZ	5305-01-383-6136	96906	MS51849-65C	SCREW, MACHINE	16
3	PAFZZ	5310-00-933-8120	80205	MS35338-138	WASHER, LOCK	16
4	PAFZZ	5310-00-619-1148	80205	MS15795-808	WASHER, FLAT	16
5	XBFZZ		90598	60110-1	GRILLE	1
6	XBFFF		90598	60106-100	DAMPER ASSEMBLY.....	1
					UOC: YKR	
6	XBFFF		90598	60206-100	DAMPER ASSEMBLY.....	1
					UOC: LPL	
7	PAFZZ	5320-00-129-9706	81349	M24243/1-F402	.RIVET, BLIND	1
8	PAFZZ	4010-00-106-5657	60532	CHN2	. .....	1
9	PAFZZ	5310-00-982-6813	80205	MS21044C06	.NUT, SELF-LOCKING	6
10	PAFZZ	5310-00-880-5976	80205	MS15795-806	.WASHER, FLAT	6
					UOC: YKR	
10	PAFZZ	5310-01-303-4701	96906	MS51412-1	.WASHER, FLAT	6
					UOC: LPL	
11	XBFZZ		90598	60111-100	.PLATE, MOUNTING	1
12	XBFFF		90598	60117-100	.DOOR ASSEMBLY	1
13	PBFZZ	5320-01-295-9924	54089	2314141-2	..RIVET, BLIND	8
14	XBFZZ		90598	60116-1	..BRACKET	1
15	PAFZZ	5320-00-882-8388	81349	M24243/6A403H	..RIVET, BLIND	6
16	PFFZZ	5310-01-398-9656	07707	ABUP4	..WASHER, FLAT, BACKUP	6
17	XBFZZ		90598	60114-1	..HINGE	3
18	XBFZZ		90598	60109-1	..DOOR, DAMPER	1
19	MFFZZ		90598	60106-8	.GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 10.75 INCHES	2
					UOC: YKR	
19	MFFZZ		90598	60206-8	.GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 10.75 INCHES	2
					UOC: LPL	
20	MFFZZ		90598	60106-9	.GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 7.88 INCHES	2
					UOC: YKR	
20	MFFZZ		90598	60206-9	.GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 7.88 INCHES	2
					UOC: LPL	
21	XBFFF		90598	60105-100	.FRAME-DAMPER ASSEMBLY.....	1
					UOC: YKR	
21	XBFFF		90598	60205-100	.FRAME-DAMPER ASSEMBLY.....	1
					UOC: LPL	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 12 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
22	MFFZZ		90598	60105-5	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 8.5 INCHES	2
					UOC: YKR	
22	MFFZZ		90598	60205-5	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 8.5 INCHES	2
					UOC: LPL	
23	MFFZZ		90598	60105-6	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 2.88 INCHES	2
					UOC: YKR	
23	MFFZZ		90598	60205-6	..GASKET MAKE FROM P/N MIL-R-6130, CAGEC 81349, CUT TO 2.88 INCHES	2
					UOC: LPL	
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 12 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

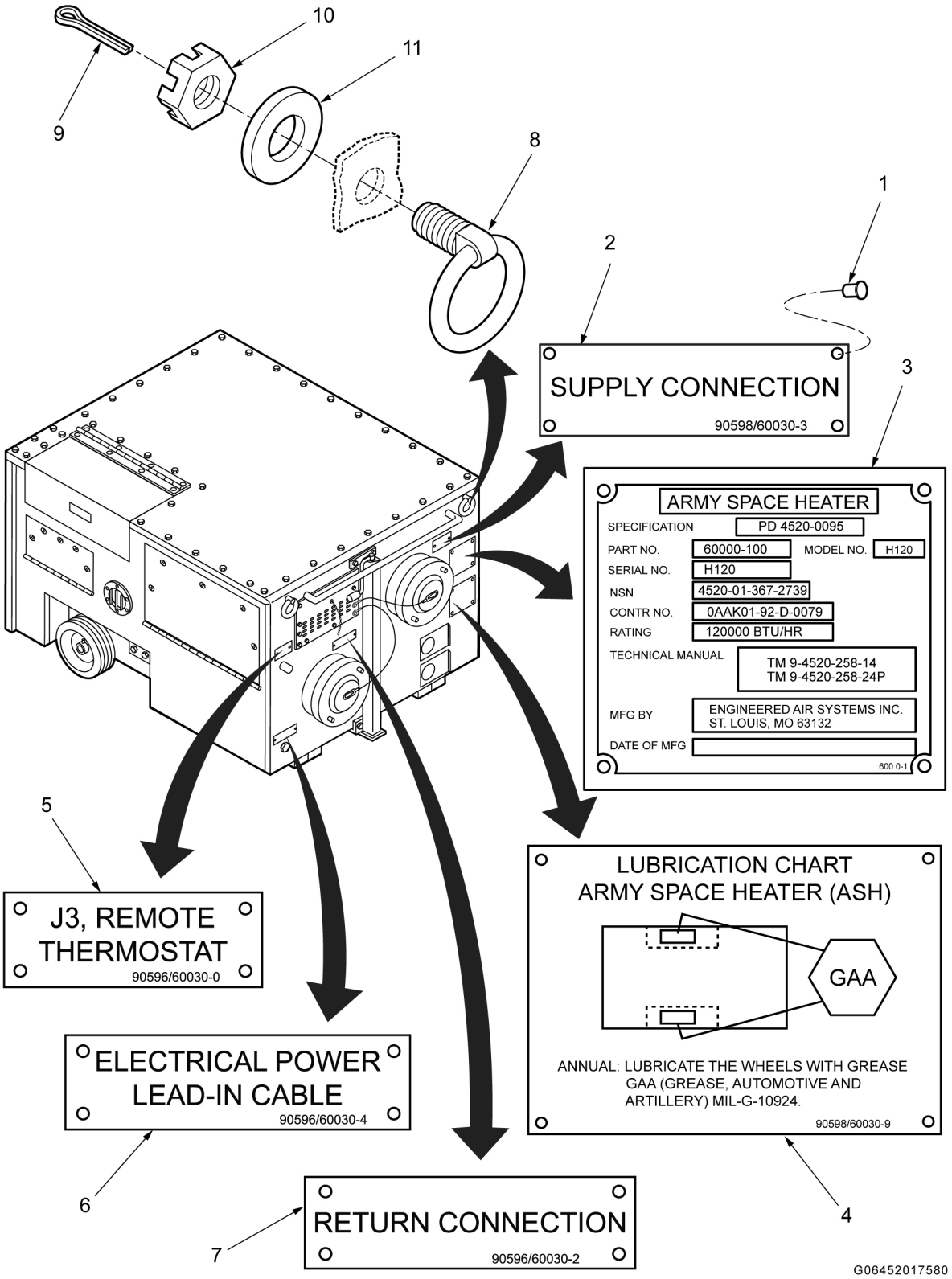


Figure 37. Tie Down Ring and Informational Plates

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 13 EYEBOLT, TIE-DOWN RING, HANDBOOK COMPARTMENT AND FRAME ASSEMBLY	
					FIGURE 37 Tie Down Ring and Informational Plates	
1	PBFZZ	5320-01-110-7954	06888	AD42AH	RIVET, BLIND	24
2	XBFZZ		90598	60030-3	NAMEPLATE SUPPLY CONNECTION UOC: YKR	1
2	XBFZZ		90598	60202-3	NAMEPLATE SUPPLY CONNECTION UOC: LPL	1
3	XBFZZ		90598	60010-1	PLATE, IDENTIFICATION UOC: YKR	1
3	XBFZZ		90598	60201-1	PLATE, IDENTIFICATION FUEL SPECIFICATION UOC: LPL	1
4	XBFZZ		90598	60030-9	NAMEPLATE LUBRICATION CHART ARMY SPACE HEATER (ASH) UOC: YKR	1
4	XBFZZ		90598	60202-9	NAMEPLATE LUBRICATION CHART ARMY SPACE HEATER (ASH) UOC: LPL	1
5	XBFZZ		90598	60030-8	NAMEPLATE J3, REMOTE THERMOSTAT UOC: YKR	1
5	XBFZZ		90598	60202-8	NAMEPLATE J3, REMOTE THERMOSTAT UOC: LPL	1
6	XBFZZ		90598	60030-4	NAMEPLATE ELECTRICAL POWER LEAD-IN CABLE UOC: YKR	1
6	XBFZZ		90598	60202-4	NAMEPLATE ELECTRICAL POWER LEAD-IN CABLE UOC: LPL	1
7	XBFZZ		90598	60030-2	NAMEPLATE RETURN CONNECTION UOC: YKR	1
7	XBFZZ		90598	60202-2	NAMEPLATE RETURN CONNECTION UOC: LPL	1
8	PAFZZ	5306-00-337-4160	98313	FDC1540	BOLT, EYE UOC: YKR	4
8	XBFZZ		90598	60223-1	RING, TIE-DOWN UOC: LPL	4
9	PAFZZ	5315-00-298-1481	80205	MS24665-357	PIN, COTTER UOC: LPL	4

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
10	PAFZZ	5310-00-998-0608	96906	MS35692-61	NUT, SLOTTED, HEX ..... UOC: LPL	4
11	PAFZZ	5310-00-809-8533	96906	MS27183-23	WASHER, FLAT ..... UOC: LPL	4
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

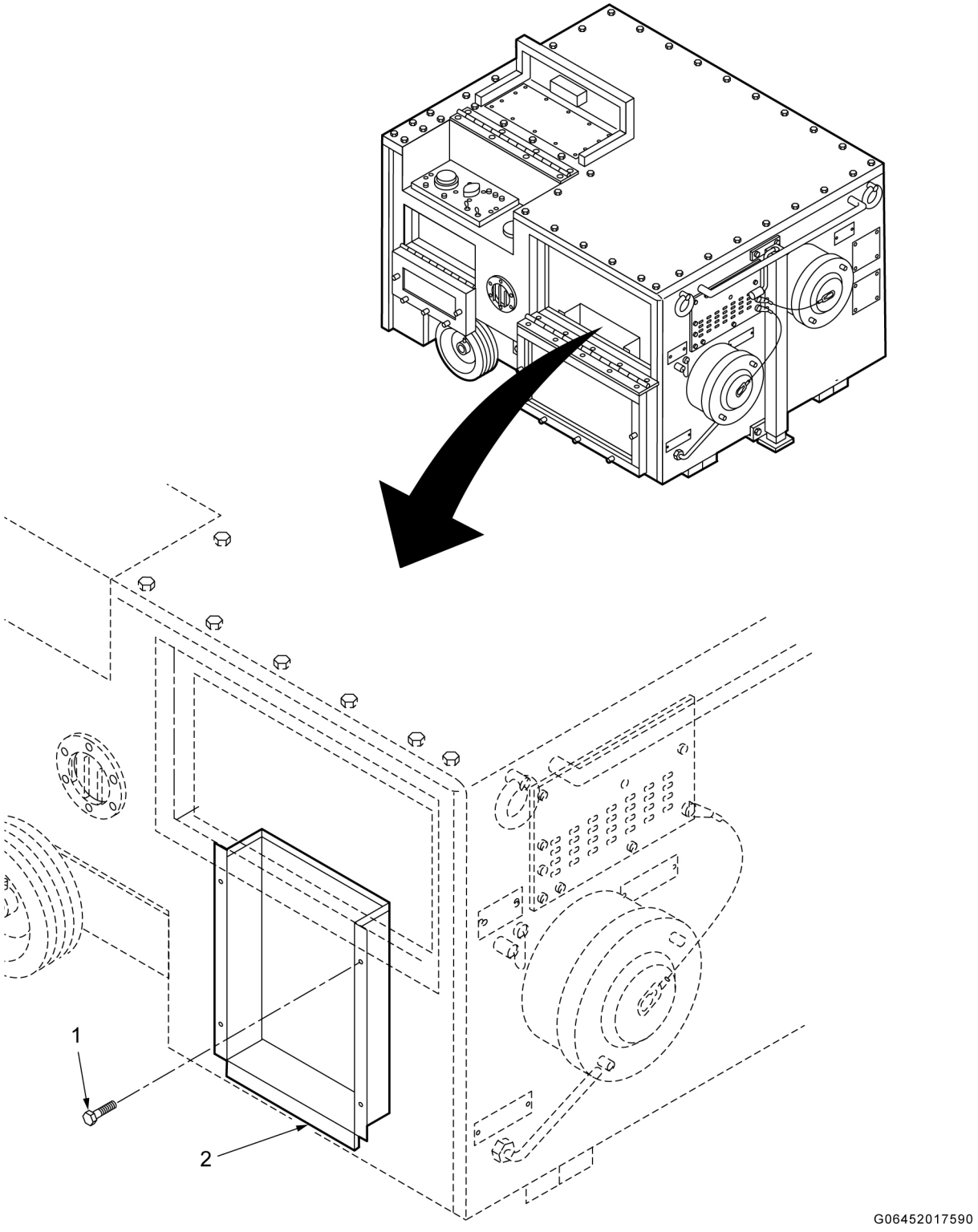


Figure 38. Handbook Compartment.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 13 EYEBOLT, TIE-DOWN RING, HANDBOOK COMPARTMENT AND FRAME ASSEMBLY	
					FIGURE 38 Handbook Compartment.	
1	PAFZZ	5320-00-343-5435	07707	AD43AH	RIVET, BLIND	4
2	XBFZZ		90598	60152-1	COMPARTMENT, HANDBOOK	1
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

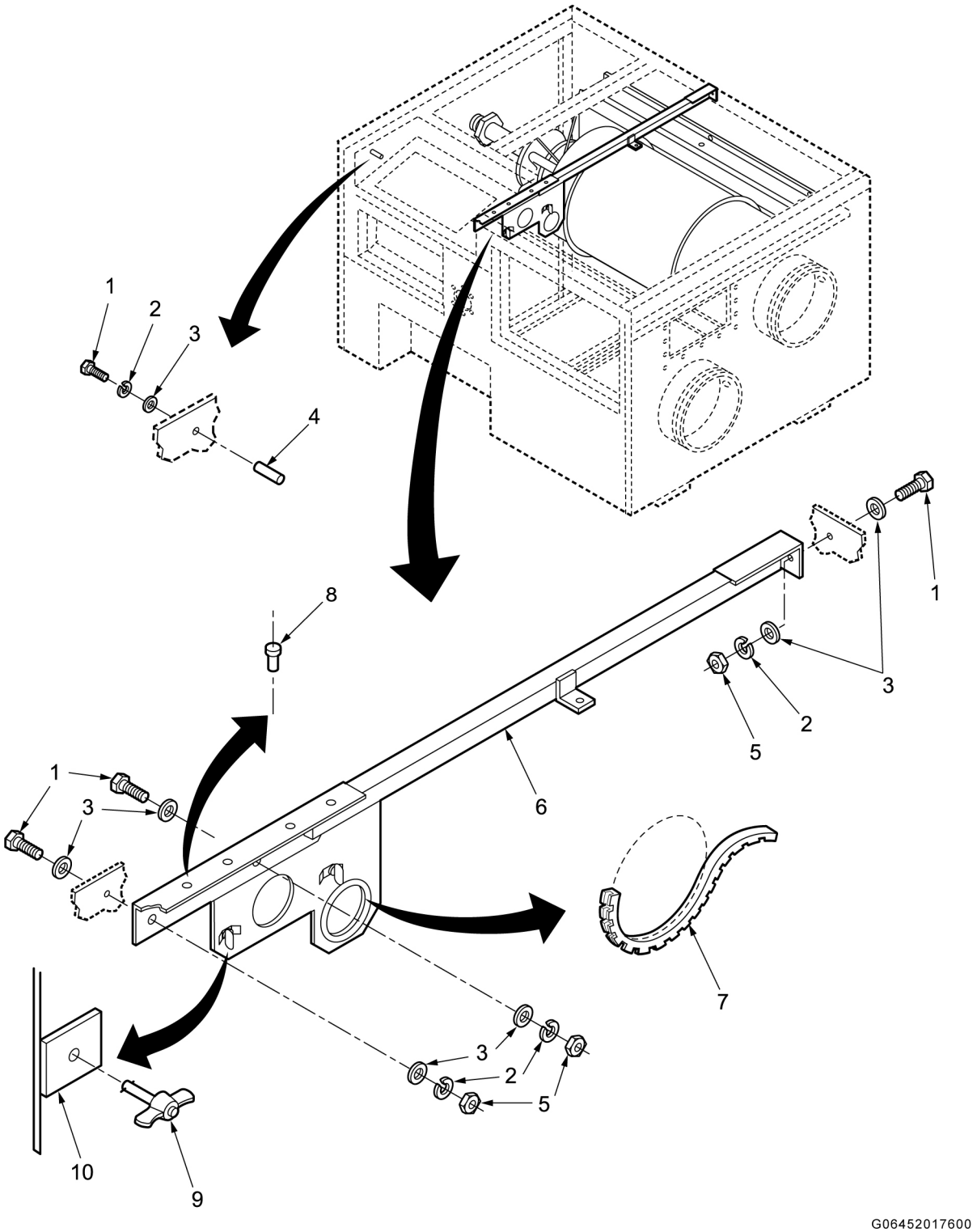


Figure 39. Heat Exchanger Brace.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1301 HEAT EXCHANGER BRACE	
					FIGURE 39 Heat Exchanger Brace.	
1	PAFZZ	5305-00-068-0508	07482	1C817P63	SCREW, CAP, HEXAGON HEAD	4
2	PAFZZ	5310-00-933-8121	26916	004-003005-020	WASHER, LOCK	4
3	PAFZZ	5310-00-582-5677	80205	MS15795-810	WASHER, FLAT	7
4	XBFZZ		90598	60077-1	BAR, SPRING CLIP HOLDER	1
5	PAFZZ	5310-00-767-0445	96906	MS51971-2	NUT, PLAIN, HEXAGON	3
6	XBFFF		90598	60035-100	SUPPORT, CONTROL BOX	1
7	PAFZZ	5325-00-074-3301	96906	MS21266-2N	.GROMMET, NONMETALLIC	1
8	PAFZZ	5310-00-080-9156	25472	A25K80	.NUT PLAIN, BLIND RIVET	2
9	XBFZZ		90598	60046-1	.SCREW, WING	2
10	XBFZZ		90598	60047-1	.CLAMP, EXHAUST ELBOW STORAGE	2
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

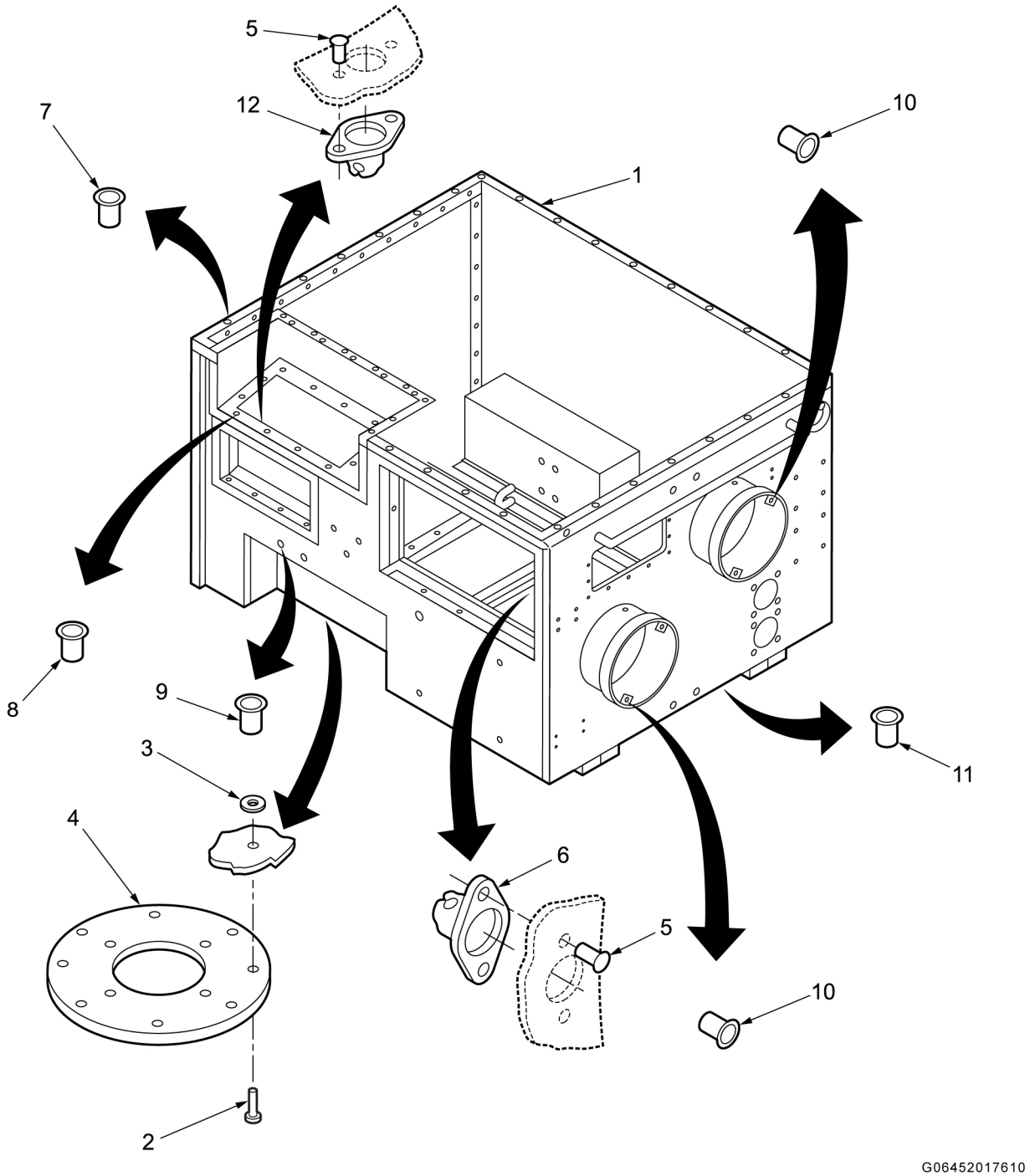


Figure 40. Frame Assembly.

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 1302 FRAME ASSEMBLY FIGURE 40 Frame Assembly.	
1	XBFFF		90598	60100-100	FRAME ASSEMBLY.....	1
					UOC: YKR	
1	XBFFF		90598	60204-100	FRAME ASSEMBLY.....	1
					UOC: LPL	
2	PBFZZ	5320-01-110-7954	06888	AD42AH	.RIVET, BLIND	8
3	XBFZZ		06888	ABUP4	.PLATE ,BACKUP	8
4	XBFZZ		90598	60497-1	.RING, FUEL DRAIN	1
5	PAFZZ	5320-00-143-6149	81349	M24243/7-A403H	.RIVET, BLIND	24
6	PAFZZ	5325-01-480-8761	81205	BACR11AV3	.RECEPTACLE, TURNLOCK	10
7	PAFZA	5310-00-620-4421	0VK23	S25KB151	.NUT PLAIN, BLIND RIVET	83
					UOC: YKR	
7	PAFZA	5310-00-620-4421	0VK23	S25KB151	.NUT PLAIN, BLIND RIVET	61
					UOC: LPL	
8	PAFZZ	5310-00-021-7088	80205	NAS1330A3KB116	.NUT PLAIN, BLIND RIVET	20
9	PAFZZ	5310-00-188-7969	25472	A8K75	.NUT PLAIN, BLIND RIVET	4
10	PAFZZ	5310-00-225-4680	96906	MS27130A25K	.NUT PLAIN, BLIND RIVET	4
11	PAFZZ	5310-01-198-1722	19207	12339998-13	.NUT PLAIN, BLIND RIVET	5
12	PAFZZ	5325-00-639-7264	71286	244-16C	.RECEPTACLE, TURNLOCK	2
					END OF FIGURE	

REPAIR PARTS AND SPECIAL TOOLS LIST – GROUP 13 - (CONTINUED)

END OF WORK PACKAGE

FIELD MAINTENANCE
BULK ITEMS LIST

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP BULK MATERIAL Bulk Items FIG BULK	
1	PAFZZ	6145-00-865-2058	16428	8663	BRAID,WIRE ;	1
2	PAFZZ	6145-00-170-5274	4U897	C2-0083	BRAID,WIRE ;	1
3	XDFZZ		81349	CO-03H0F(3-16) 0 435	CABLE,POWER, ELECTRICAL ;	1
4	XDFZZ	6145-00-519-1333	81349	M3432-03HOF(3/12) 0635	CABLE,POWER, ELECTRICAL ;	1
5	XDFZZ		17217	0050D	GASKET ;	1
6	XDFZZ		96906	MS20257C2-1400	HINGE,BUTT ;	1
7	PAFZZ	5340-00-282-3745	96906	MS20257C3-4800	HINGE,BUTT ;	1
8	PAFZZ	4720-01-399-5523	39428	5510K23	HOSE,AIR DUCT ;	1
9	PAFZZ	4720-00-278-1323	81349	M8794-6	HOSE,NONMETALLIC ;	1
10	PAFZZ	5970-00-914-3118	81343	M23053/5-109-0	INSULATION SLEEVING ;	1
11	PAFZZ	4010-00-575-6233	81349	M83420/4-010	ROPE,WIRE ;	1
12	PAFZZ	5330-00-599-7172	10001	679688	RUBBER STRIP ;	1
13	PAFZZ	9320-01-399-3000	2P653	8320116	RUBBER SHEET, SOLID ;	1
14	PAFZZ	9320-01-411-7397	39428	8635K542	RUBBER SHEET, SOLID ;	1
15	PAFZZ	5330-01-200-1541	97592	F19540B14	RUBBER STRIP ;	1
16	PAFZZ	5330-01-413-2056	86730	R411NPSA.125X1.0 00X100	RUBBER STRIP ;	1
17	PAFZZ	9320-01-418-7780	86730	R411NPSA 0.125X1 .44X100	RUBBER STRIP ;	1
18	PAFZZ	5330-01-412-1879	86730	R411NPSA.125X1.5 0X100	RUBBER STRIP ;	1
19	PAFZZ	4710-00-203-3171	89619	107AX	TUBE,METALLIC ;	1
20	PAFZA	4710-00-169-4787	81346	ASTM-B280	TUBE,METALLIC ;	1
21	PAFZZ	4720-00-472-7095	13174	44-P YELLOW	TUBING,NONMETALLIC ;	1
22	PAFZZ	4720-01-483-4423	86228	AAB00037	TUBING,NONMETALLIC ;	1
23	PAFZZ	6145-00-548-2928	10001	1008356	BRAID,WIRE; UOC: LPL	1
24	PAFZZ	6145-00-548-2920	58536	AA59569R34T0500	BRAID,WIRE; UOC: LPL	1
25	XDFZZ		81349	M5046/1YZ-9	WIRE,ELECTRICAL ;	1
26	PAFZZ	6145-00-044-3579	81343	AS50861/1	WIRE,ELECTRICAL ;	1
27	PAFZZ	6145-01-276-7547	81343	AS50861/1	WIRE,ELECTRICAL ;	1
28	PAFZZ	6145-00-578-7521	81343	M5086/1-12-9	WIRE,ELECTRICAL ;	1
29	PAFZZ	6145-00-578-6072	81349	M16878/17BJE9	WIRE, ELECTRICAL ;	1
30	XDFZZ		81349	MIL-R-6130	GASKET;	1
31	XDFZZ		81349	MIL-R-6130	GASKET;	1
32	XDFZZ		96906	M20257HC2–300	HINGE;	1
33	XDFZZ		81349	M5086-1-12-0	WIRE, ELECTRICAL ;	1
34	XDFZZ		81349	M5086-1-12-9	WIRE,ELECTRICAL ;	1
35	XDFZZ		81349	M5086-1-12-5	WIRE,ELECTRICAL ;	1
					END OF FIGURE	

FIELD MAINTENANCE

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM
4730-00-011-9922	21	12
5310-00-021-7088	40	8
6145-00-044-3579	BULK	26
5305-00-054-5649	15	11
5305-00-054-6650	29	18
5305-00-054-6652	11	12
5305-00-054-6671	11	9
	12	7
5315-00-058-9771	23	4
5315-00-059-0491	35	1
	35	5
5305-00-059-3655	15	13
5305-00-059-3660	9	7
5305-00-059-3663	13	5
5340-00-067-3868	24	13
5305-00-068-0502	28	5
5305-00-068-0508	4	1
	5	5
	10	3
	18	1
	19	1
	20	1
	22	2
	24	6
	24	16
	25	6
	25	6
	28	5
	39	1
5305-00-071-2505	8	3
	25	5
	34	1
5325-00-074-3301	39	7
5340-00-079-7837	14	5
	15	8
5310-00-080-9156	39	8
5305-00-088-9520	29	12
4010-00-106-5657	36	8
5975-00-111-3208	26	15
	30	8
	31	7
	32	2
5940-00-115-2674	26	25
5320-00-129-9706	36	7
5320-00-140-4965	6	1
	7	1
5940-00-143-4777	6	10
	7	10
	31	3
	33	5
5940-00-143-4794	6	9
	7	9
5320-00-143-6149	40	5
4710-00-169-4787	BULK	20
6145-00-170-5274	BULK	2
5310-00-184-8628	9	6
4730-00-187-0839	29	28
4730-00-187-0840	21	7
5315-00-187-9384	35	5
5315-00-187-9528	23	3
5310-00-188-7969	40	9
4730-00-193-2707	21	16
4730-00-196-1964	21	4
4710-00-203-3171	BULK	19
5940-00-204-8990	31	2
5310-00-208-9255	9	5
4730-00-222-1837	21	14
5975-00-223-7543	30	7
	31	4
5305-00-225-3839	27	5
5305-00-225-3843	11	3
	27	5
5310-00-225-4680	40	10
5306-00-226-4825	5	1
	20	8
5306-00-226-4826	22	9
4720-00-228-1078	16	7
9340-00-230-0441	27	1
5331-00-248-3836	13	8
5310-00-250-9477	26	1
4730-00-263-2733	21	11
5925-00-270-3998	13	7
5310-00-275-9310	26	7
4730-00-277-5683	21	9
4720-00-278-1323	BULK	9
5340-00-282-3745	BULK	7
5940-00-283-5280	11	6
	26	17

NATIONAL STOCK NUMBER INDEX - (CONTINUED)

STOCK NUMBER	FIG.	ITEM
	30	6
	33	2
5325-00-291-9366	28	1
5340-00-297-0312	19	7
	22	5
	29	1
	29	7
5315-00-298-1481	37	9
4730-00-314-8366	14	7
	17	7
4730-00-334-7840	16	3
5306-00-337-4160	37	8
5320-00-343-5435	30	1
	38	1
5320-00-409-6841	3	8
5935-00-415-4043	31	6
4720-00-472-7095	BULK	21
6145-00-519-1333	BULK	4
5310-00-543-2740	11	2
5325-00-543-3388	5	22
	6	7
	7	7
	12	2
5310-00-543-4385	5	34
5310-00-543-5933	13	4
6145-00-548-2920	BULK	24
6145-00-548-2928	BULK	23
5330-00-550-0303	24	7
	24	15
5310-00-559-0070	14	4
	15	3
5325-00-559-7849	6	6
	7	6
4010-00-575-6233	BULK	11
6145-00-578-6072	BULK	29
6145-00-578-7521	BULK	28
5310-00-582-5677	4	3
	5	7
	8	4
	10	5
	18	3
	19	3
	20	3
	22	4
	24	5

STOCK NUMBER	FIG.	ITEM
	24	11
	25	4
	26	3
	28	4
	34	3
	39	3
5310-00-582-5965	28	3
	27	3
5330-00-599-7172	BULK	12
5310-00-614-3505	35	6
5310-00-615-1556	27	9
5310-00-619-1148	5	10
	9	3
	36	4
5310-00-620-4421	5	29
	40	7
	40	7
	20	7
	22	8
	35	12
5310-00-638-2605	5	33
	5	33
5325-00-639-7264	40	12
5325-00-646-8092	5	23
	6	8
	7	8
	12	4
5930-00-683-1626	13	12
5340-00-702-2848	24	12
5310-00-722-5998	29	20
5305-00-724-5851	29	16
5310-00-761-6882	27	2
5305-00-763-7829	35	13
5305-00-765-4257	29	10
5310-00-767-0445	8	1
	20	5
	25	2
	28	2
	35	10
	39	5
5325-00-803-5773	5	21
5310-00-809-4058	28	4
	27	4
5310-00-809-4061	12	6
5310-00-809-8533	37	11

NATIONAL STOCK NUMBER INDEX - (CONTINUED)

STOCK NUMBER	FIG.	ITEM
5310-00-809-8544	15	4
4730-00-816-8558	17	2
	17	10
5365-00-820-4535	32	5
5310-00-823-8803	35	6
5325-00-839-2277	12	3
5310-00-852-8593	5	8
5310-00-855-1102	29	3
6645-00-864-6794	13	1
6145-00-865-2058	BULK	1
5310-00-880-5976	36	10
5310-00-880-5978	26	9
5320-00-882-8388	3	5
	5	39
	36	15
5310-00-903-5966	24	3
	24	9
	27	2
4730-00-908-3194	10	1
	28	8
4730-00-908-6292	24	1
5970-00-914-3118	BULK	10
4130-00-922-2439	36	1
5930-00-929-2599	13	11
5310-00-929-6395	29	19
5310-00-933-8119	26	8
5310-00-933-8120	5	9
	9	2
	26	2
	27	4
	29	5
	36	3
5310-00-933-8121	4	2
	5	6
	8	2
	10	4
	18	2
	19	2
	20	2
	22	3
	24	4
	24	10
	25	3
	25	3
	28	3
	27	3
	29	4
	29	4
	34	2
	39	2
5310-00-934-0226	26	2
	29	5
5310-00-934-9757	15	2
5310-00-934-9760	27	8
5310-00-934-9761	11	7
5310-00-939-1060	5	34
6240-00-939-7859	13	13
5320-00-956-7355	5	16
	12	8
5320-00-956-7362	6	3
	7	3
7930-00-969-6941	14	8
	17	6
5310-00-974-6623	5	2
	20	6
	35	11
5310-00-982-4999	15	10
5310-00-982-6813	36	9
5310-00-982-6814	12	5
5310-00-984-0388	5	20
	6	5
	7	5
5310-00-984-3806	22	7
5305-00-984-6193	15	5
5310-00-984-7042	23	2
5310-00-988-2652	9	12
	13	3
5310-00-998-0608	37	10
4730-01-017-5119	15	1
5935-01-025-2137	31	9
5935-01-025-2139	30	12
5935-01-040-8019	33	4
5940-01-079-1936	33	6
5940-01-082-3321	26	18

NATIONAL STOCK NUMBER INDEX - (CONTINUED)

STOCK NUMBER	FIG.	ITEM
4030-01-088-2952	9	8
5975-01-092-8655	29	17
5325-01-104-4987	28	12
5320-01-110-7954	3	2
	5	18
	5	18
	5	27
	5	27
	14	1
	37	1
	40	2
5310-01-145-4564	11	8
5935-01-159-3706	31	5
5310-01-159-8559	11	1
5935-01-172-9912	30	10
5935-01-175-8420	30	9
5935-01-181-1670	32	6
5935-01-181-6651	30	2
5935-01-184-7188	32	3
5935-01-189-3220	31	8
5340-01-190-7979	5	14
	16	6
5310-01-198-1722	40	11
5330-01-200-1541	BULK	15
4730-01-210-3516	21	6
4730-01-212-2601	21	1
4730-01-227-1954	18	11
4730-01-240-6108	21	3
6145-01-276-7547	BULK	27
4820-01-280-3975	5	38
5930-01-289-7374	26	12
4730-01-290-1366	16	4
4810-01-290-4925	21	13
4810-01-291-9533	21	15
5305-01-292-6306	14	3
	26	10
5320-01-295-9924	12	11
	12	14
	36	13
4320-01-299-0460	23	6
5310-01-303-4701	36	10
5340-01-307-4394	5	14
5340-01-307-4394	16	5
2910-01-312-1406	21	2
5305-01-315-9067	3	1

STOCK NUMBER	FIG.	ITEM
4730-01-317-8241	5	35
5331-01-329-9654	29	14
4730-01-331-2049	5	36
6150-01-335-3449	32	1
5305-01-342-5174	27	10
5340-01-356-5057	16	6
5305-01-358-3743	1	1
5305-01-358-3743	23	1
5975-01-364-5613	31	13
5305-01-383-6136	9	1
5305-01-383-6136	36	2
5925-01-397-6052	13	9
5390-01-397-7317	15	7
5950-01-397-7319	27	13
6150-01-397-7320	28	11
5935-01-397-9876	32	4
5945-01-398-2758	15	14
5331-01-398-4993	13	6
5331-01-398-4995	31	14
4730-01-398-5665	16	2
4730-01-398-5667	35	8
6105-01-398-7369	23	7
5930-01-398-7370	15	16
6685-01-398-7371	30	4
4730-01-398-8324	17	3
4730-01-398-8324	17	11
4730-01-398-8325	21	10
4710-01-398-8361	1	3
4710-01-398-8364	29	29
5310-01-398-9656	3	6
5310-01-398-9656	36	16
5330-01-398-9728	29	9
4720-01-398-9929	2	1
4520-01-399-0872	1	2
4520-01-399-1406	29	21
6680-01-399-1607	18	7
5310-01-399-1676	35	3
5342-01-399-2018	18	5
4530-01-399-2423	29	26
4330-01-399-2425	29	27
6210-01-399-2448	13	14
6210-01-399-2452	13	15
5930-01-399-2529	26	11
9320-01-399-3000	BULK	13
5930-01-399-3255	13	10

NATIONAL STOCK NUMBER INDEX - (CONTINUED)

STOCK NUMBER	FIG.	ITEM
2910-01-399-4210	18	6
2910-01-399-5522	18	10
4720-01-399-5523	BULK	8
5975-01-400-0600	31	12
5315-01-400-5794	35	2
5340-01-406-7969	9	9
5331-01-410-8140	29	24
9320-01-411-7397	BULK	14
5330-01-412-1879	BULK	18
5330-01-413-2056	BULK	16
9320-01-418-7780	BULK	17
5975-01-428-6574	30	11
4730-01-458-7779	5	37
	18	8
5325-01-480-8761	5	40
	40	6
3010-01-482-1577	23	5
4720-01-483-3693	16	1
4720-01-483-4423	BULK	22
5950-01-483-5396	27	13
4730-01-483-9768	16	4
4730-01-483-9874	5	35
6685-01-496-9950	26	6
6685-01-496-9994	14	11
2530-01-497-0237	35	7
4140-01-497-1143	20	9
4140-01-497-1840	24	8
4530-01-497-1860	29	8
6150-01-497-4406	33	1
4710-01-497-4833	21	5
4710-01-497-4836	17	5
4710-01-497-4841	21	8
4710-01-497-4849	17	9
4710-01-497-5102	17	1
4710-01-497-5103	5	32
4710-01-497-5104	14	6
4710-01-497-5139	28	10
5940-01-497-5779	11	10
5945-01-497-6064	15	9
5340-01-497-6707	3	4
5930-01-497-6852	30	3
5961-01-498-2591	28	9
2910-01-498-3151	18	4
5120-01-512-8935	34	4
5977-01-544-6774	29	23
5330-01-545-4144	13	2
5330-01-545-4147	24	18
4720-01-545-4461	16	1
5950-01-551-2820	11	13

END OF WORK PACKAGE

FIELD MAINTENANCE

PART NUMBER INDEX

PART NUMBER	FIG.	ITEM
AAB00037	BULK	22
AA59569R34T0500	BULK	24
ABUP4	3	6
	36	16
	40	3
AD42AH	3	2
	5	18
	5	18
	5	27
	5	27
	14	1
	37	1
	40	2
AD43AH	30	1
	38	1
AD64AH	6	1
	7	1
AD64H	5	16
AD64H	12	8
ASTM-B280	BULK	20
AS38386B2D015H	2	1
AS4842/1	29	28
AS4861	21	12
AS50151	31	9
AS5194	21	7
AS50861/1	BULK	26
AS50861/1	BULK	27
AS5178D06	5	33
	5	33
AS85049/11	31	5
AS9955-023	31	14
AVHC6-6-EM	16	4
A25K80	39	8
A28-1C6-6-56	16	4
A28-1N6-6-57	5	35
A31KB125	5	48
A484-3	5	35
A8K75	40	9
A-A-52506-F-12	10	1
	28	8
A-A-52506-F-48	24	1
BACR11AV3	5	40
	40	6
BACS21X10C	12	3
B1821BH025C088N	8	3
	25	5
	34	1
B1821BH025C100N	11	3
	27	5
B1821BH031C075N	5	1
	20	8
B1821BH031C088N	22	9
B687R-10B	21	4
B687R-20B	21	14
B687R-6B	21	16
CHN2	36	8
CO-03H0F(3-16) 0 435	BULK	3
C2-0083	BULK	2
C3419-M-33	15	14
C5205X6	5	36
C7931-1420	19	7
	22	5
	29	1
	29	7
D4524-371	36	1
E29-0003-002	30	13
FDC1540	37	8
F19540B14	BULK	15
GFTSX-12	11	10
HHSCP.9-6676W	31	10
HK799G16M	28	3
	27	3
HSCR9-6676W	33	3
H2-66M	5	14
	16	5
H3-65M	16	6
J530	21	11
J6BC-325	23	6
M20257HC2-300	BULK	32
M5086-1-12-0	BULK	33
M5086-1-12-5	BULK	35
M5086-1-12-9	BULK	34
MIL-R-6130	BULK	30
	BULK	31
MNG10-6RX	31	2
MS14307-1	21	9
MS15795-805	29	20

PART NUMBER INDEX - (CONTINUED)

PART NUMBER	FIG.	ITEM
MS15795-806	36	10
MS15795-808	5	10
	9	3
	36	4
MS15795-810	4	3
	5	7
	8	4
	10	5
	18	3
	19	3
	20	3
	22	4
	24	5
	24	11
	25	4
	26	3
	28	4
	34	3
	39	3
MS15795-812	20	7
	22	8
	35	12
MS15795-820	35	6
MS15795-846	27	9
MS16562-233	23	4
MS20257C2-1400	BULK	6
MS20257C3-4800	BULK	7
MS20659-108	26	25
MS21044C06	36	9
MS21044C08	12	5
MS21044C3	9	5
MS21266-2N	39	7
MS21333-109	24	13
MS21333-128	24	12
MS21333-67	14	5
	15	8
MS24523-30	13	12
MS24665-142	23	3
MS24665-357	37	9
MS24665-372	35	1
	35	5
MS24665-389	35	5
MS25036-106	11	6
	26	17
	30	6
	33	2
MS25036-112	6	9
	7	9
MS25042-14DA	30	9
MS25042-16DA	31	8
MS25043-14DA	30	2
MS25043-16DA	32	3
MS27130A25K	40	10
MS27183-10	28	4
	27	4
MS27183-15	12	6
MS27183-21	35	6
MS27183-23	37	11
MS27183-7	15	4
MS28741-6-3000	16	7
MS29513-012	13	8
MS3367-5-9	26	15
	30	8
	31	7
	32	2
MS3368-4-9D	30	7
	31	4
MS3401D16-10S	32	4
MS3404D14S7S	33	4
MS3406D14S-7P	30	12
MS3420-6	32	5
MS3420-8	30	11
MS35206-245	15	5
MS35333-46	5	34
MS35333-73	13	4
MS35333-74	11	2
MS35333-81	5	34
MS35338-136	29	19
MS35338-137	26	8
MS35338-138	5	9
	9	2
	26	2
	27	4
	29	5
	36	3
MS35338-140	5	2
	20	6
	35	11
MS35338-153	26	2
	29	5

PART NUMBER INDEX - (CONTINUED)

PART NUMBER	FIG.	ITEM
MS35489-11	28	1
MS35489-11X	28	12
MS35649-103	5	8
MS35649-204	27	8
MS35649-2255B	29	3
MS35649-264	11	7
MS35649-282	15	2
MS35649-83	26	7
MS35650-103	9	12
	13	3
MS35691-406	11	1
MS35692-61	37	10
MS51029-53	29	16
MS51412-1	36	10
MS51479-1	3	1
MS51492-07	14	3
	26	10
MS51504A4-4Z	21	6
MS51504A4Z	21	10
MS51504A6Z	21	1
	5	37
MS51504B6Z	18	8
MS51531B4	14	7
	17	7
MS51531B6Z	17	3
	17	11
MS51533B6	17	2
	17	10
MS51844-62	9	8
MS51849-139C	1	1
	23	1
MS51849-65C	9	1
	36	2
MS51849-74C	27	10
MS51957-15	15	11
MS51957-26	29	18
MS51957-28	11	12
MS51957-46	11	9
	12	7
MS51958-59	15	13
MS51958-64	9	7
MS51958-67	13	5

PART NUMBER	FIG.	ITEM
MS51959-43	29	10
MS51959-99	35	13
MS51967-2	27	2
MS51971-1	24	3
	24	9
MS51971-1	27	2
MS51971-2	8	1
	20	5
	25	2
	28	2
	35	10
	39	5
MS90725-8	27	5
MS9955-107	13	6
M16878/17BJE9	BULK	29
M23053/5-109-0	BULK	10
M24243/1-B606	3	8
M24243/1-F402	36	7
M24243/6A403H	3	5
	5	39
	36	15
M24243/7-A403H	40	5
M3432-03HOF(3/12) 0635	BULK	4
M3971/1-6-S	13	1
M45913/1-5CG5C	22	7
M5046/1YZ-9	BULK	25
M5086/1-12-9	BULK	28
M7928/5-5	33	6
M83420/4-010	BULK	11
M85049/11-112W	32	6
M85049/11-17W	30	10
M8794-6	BULK	9
NASM90725	28	5
NAS1330A3KB116	40	8
OR-239-1511-549	29	14
PDM-25	13	7
	5	14
PDP-6	16	6
R411NPSA 0.125X1 .44X100	BULK	17
R411NPSA.125X1.0 00X100	BULK	16
R411NPSA.125X1.50X100	BULK	18
R70-2-HCQ-238	15	7

PART NUMBER INDEX - (CONTINUED)

PART NUMBER	FIG.	ITEM
SAE J514 4 07011 5C	14	8
	17	6
S25KB151	5	29
	40	7
	40	7
TBD3	22	1
004-003005-020	4	2
	5	6
	8	2
	10	4
	18	2
	19	2
	20	2
	22	3
	24	4
	24	10
	25	3
	25	3
	28	3
	27	3
	29	4
	29	4
	34	2
	39	2
0050D	BULK	5
01G740162	25	1
01G740163	25	1
0271874/P-750	27	1
05HP-8	18	11
0770-8	26	9
0-1290/056762	29	24
1C817P63	4	1
	5	5
	10	3
	18	1
	19	1
	20	1
	22	2
	24	6
	24	16
	25	6
	25	6
	28	5
	39	1
1008356	BULK	23

PART NUMBER	FIG.	ITEM
10182089	31	6
10640709-1	6	3
	7	3
107AX	BULK	19
117313-00	24	19
120MB	13	13
12258879-2	21	3
12339998-13	40	11
12408	29	17
12804	13	10
13218E0181-7	16	3
13229E8567	32	1
13229E8567-2	32	7
13229E8567-3	32	8
13229E8567-4	32	9
14929	23	2
1752029-01	21	2
1.25GPH80W	29	26
200984	18	7
20600D39-153	26	11
21C116-06	11	8
2251	31	12
2314141-2	12	11
	12	14
	36	13
244-16C	40	12
24-1164-2	13	11
267A19-12	11	11
267-A42-5	11	5
320569	6	10
	7	10
	31	3
	33	5
3234	31	13
333-1299-000	15	10
343544R91	15	1
3 X 290	21	13
40G26-1	5	22
	6	7
	7	7
	12	2
4002-0S	5	23
	6	8
	7	8
	12	4

PART NUMBER INDEX - (CONTINUED)

PART NUMBER	FIG.	ITEM
4002-28S	6	6
	7	6
4002-SW-SS	5	20
	6	5
	7	5
4002-8S	5	21
4306317	14	11
44-P YELLOW	BULK	21
45560-1	29	27
5X425	26	18
5510K23	BULK	8
5801257	28	8
6X409	21	15
60000-158	5	4
60010-1	37	3
60011-1	12	12
60012-1	14	2
60012-2	14	2
60020-1	35	3
60022-1	5	13
60023-100	18	5
60027-100	18	6
60029-100	18	9
60030-1	5	28
60030-2	37	7
60030-3	37	2
60030-4	37	6
60030-5	5	31
60030-6	5	19
60030-7	5	30
60030-8	37	5
60030-9	37	4
60031-1	5	12
60032-1	4	13
60032-100	4	4
60032-2	4	8
60032-3	4	12
60032-4	4	9
60032-5	4	10
60032-6	4	11
60033-1	3	7
60034-1	3	11

PART NUMBER	FIG.	ITEM
60035-100	39	6
60040-100	3	4
60045-100	9	13
60046-1	39	9
60047-1	39	10
60048-100	8	5
60050-100	34	4
60075-1	10	2
60076-1	3	9
60077-1	39	4
60078-1	3	10
60079-1	15	6
60100-100	40	1
60104-100	35	2
60105-100	36	21
60105-5	36	22
60105-6	36	23
60106-100	36	6
60106-8	36	19
60106-9	36	20
60109-1	36	18
60110-1	36	5
60111-100	36	11
60114-1	36	17
60116-1	36	14
60117-100	36	12
60140-21	5	45
60148-100	5	26
60152-1	38	2
60169-1	5	46
60174-1	6	12
60175-1	7	12
60179-1	5	44
60188-1	4	5
60188-2	4	6
60188-3	4	7
60201-1	37	3
60202-1	5	28
60202-2	37	7
60202-3	37	2
60202-4	37	6
60202-5	5	31

PART NUMBER INDEX - (CONTINUED)

PART NUMBER	FIG.	ITEM
60202-6	5	19
60202-7	5	30
60202-8	37	5
60202-9	37	4
60203-1	4	13
60203-100	4	13
60203-2	4	8
60203-3	4	12
60203-4	4	9
60203-5	4	10
60203-6	4	11
60204-100	40	1
60205-100	36	21
60205-5	36	22
60205-6	36	23
60206-100	36	6
60206-8	36	19
60206-9	36	20
60210-100	16	1
60213-100	5	15
60213-22	5	41
60213-23	5	42
60213-24	5	43
60214-100	5	47
60216-32	26	24
60217-1	3	3
60218-1	28	6
60219-100	29	2
60220-100	5	17
60220-3	5	25
60220-4	5	24
60223-1	37	8
60225-1	34	4
60227-100	27	13
60230-100	28	10
60274-1	35	7
60402-78	11	4
60403-1	13	9
60404-1	30	4
60408-1	23	7
60411-7	30	14
60411-9	33	9
60411-17	31	11
60411-21	33	8
60411-23	33	7
60410-100	30	3
60411-100	30	5
60411-101	33	1
60411-102	31	1
60412-100	28	11
60414-100	28	9
60420-100	10	6
60429-1	3	3
60432-1	15	16
60438-100	11	13
60440-1	26	20
60440-100	26	14
60440-2	26	19
60440-3	26	21
60440-4	26	22
60440-5	26	23
60440-7	26	16
60441-100	26	6
60444-100	27	13
60450-100	18	4
	18	10
60480-100	28	10
60484-1	17	4
60484-100	17	1
60485-1	17	12
60485-100	17	9
60486-100	21	5
60487-1	17	8
60487-100	17	5
60488-1	14	9
60488-100	14	6
60489-100	5	32
60490-100	16	1
60492-100	21	8
60494-1	5	11
60497-1	40	4
60498-1	19	5
60498-100	19	4
60499-1	19	6
60503-1	20	4
60501-100	22	6
60504-100	22	10
60506-100	20	9
60517-100	26	4
60518-1	26	5

PART NUMBER INDEX - (CONTINUED)

PART NUMBER	FIG.	ITEM
60521-100	29	6
60524-1	27	12
60524-100	27	11
60531-1	26	13
60533-100	24	8
60539-1	27	6
60554-100	27	7
60557-100	1	3
60558-100	1	4
60561-100	1	2
60564-1	5	3
60565-1	9	11
60565-100	9	4
60565-4	9	10
60566-1	9	9
60583-100	24	14
60584-1	24	7
	24	15
60587-1	8	6
60588-1	24	18
60592-100	24	17
60593-1	24	2
60594-1	14	10
60595-1	28	6
60597-1	25	8
60598-100	28	7
60599-1	29	2
60601-100	35	9
60607-100	35	14
60611-100	35	4
60617-1	6	4
60618-1	6	13
60619-100	6	2
60619-13	6	11
	7	11
60625-1	7	4
60626-1	7	13
60627-100	7	2
60628-100	5	17
60628-3	5	25
60628-4	5	24
60634-1	23	5

PART NUMBER	FIG.	ITEM
60638-100	5	15
60638-22	5	41
60638-23	5	42
60638-24	5	43
60640-100	5	47
60642-1	25	7
60701-100	29	8
60702-100	29	25
60707-100	29	11
60709-1	29	22
60710-100	29	15
60712-1	29	21
60717-1	29	9
60731-100	29	23
60734-100	29	29
60740-100	29	13
60810-100	12	1
60810-14	12	18
60810-15	12	19
60811-100	15	9
60812-100	12	20
60815-100	12	13
60815-5	12	16
60815-6	12	17
60816-1	12	15
60817-100	12	10
60817-101	12	9
60821-1	15	15
60822-1	15	12
60824-1	13	2
679688	BULK	12
700-4F4F4F-BT	5	38
752-6405276	29	12
8320116	BULK	13
8635K542	BULK	14
8663	BULK	1
8720699-1	26	12
9B7233	14	4
	15	3
9100X5X4	16	2
915	35	8
925000-0816	9	6

PART NUMBER INDEX - (CONTINUED)

PART NUMBER	FIG.	ITEM
930000-0204	26	1
95-5710-3171-203	13	15
95-5710-3172-203	13	14

END OF WORK PACKAGE

CHAPTER 7

SUPPORTING INFORMATION

FOR

ARMY SPACE HEATER H-120, H-120-1

OPERATOR INSTRUCTIONS

REFERENCES

SCOPE

This work package lists forms, pamphlets, field manuals, technical manuals, military specifications, military standards, technical bulletins, technical circulars and common tables of allowances referenced in this manual.

ARMY REGULATIONS

AR 190-11	Physical Security of Arms, Ammunition and Explosives
AR 190-13	Army Physical Security Program
AR 190-16	Army Physical Security Program
AR 700-138	Army Logistics Readiness and Sustainability
AR 750-1	Army Material Maintenance Policy

COMMON TABLES OF ALLOWANCES

CTA 50-909	Field and Garrison Furnishings and Equipment
CTA 50-970	Expendable/Durable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items)
CTA 8-100	Army Medical Department Expendable/Durable Items

DA PAMPHLETS

DA PAM 25–33	User's Guide for Army Publications and Forms
DA PAM 738-751	Functional User's Manual for the Army Maintenance Management System (TAMMS)
DA PAM 750-8	The Army Maintenance Management System (TAMMS) User's Manual

FIELD MANUALS

FM 10-67-1	Concepts and Equipment of Petroleum Operations
FM 3-5	NBC Decontamination
FM 4-25.11	First Aid for Soldiers

FORMS

DA Form 12-R	Request for Establishment of a Publications Account
DA Form 2028	Recommended Changes to Equipment Publications
DA Form 2404	Equipment Inspection and Maintenance Worksheet
SF 361	Transportation Discrepancy Report
SF 368	Product Quality Deficiency Report (PQDR)

TECHNICAL MANUALS

TM 750-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command)
TM 9-237	Operator’s Manual for Welding Theory and Application

END OF WORK PACKAGE

FIELD MAINTENANCE

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION

The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Maintenance System concept.

This MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

- Field – includes two subcolumns, Crew (C) and Maintainer (F).
- Sustainment – includes two subcolumns, Below Depot (H) and Depot (D).

The maintenance to be performed at field and sustainment levels is described as follows:

1. Crew maintenance. The responsibility of a using organization to perform maintenance on its assigned equipment. It normally consists of inspecting, servicing, lubricating, adjusting, and replacing parts, minor assemblies, and subassemblies. The replace function for this level of maintenance is indicated by the letter "C" in the third position of the Source, Maintenance, and Recoverability (SMR) code. A "C" appearing in the fourth position of the SMR code indicates complete repair is possible at the crew maintenance level.
2. Maintainer maintenance. Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "F" appearing in the third position of the SMR code. An "F" appearing in the fourth position of the SMR code indicates complete repair is possible at the field maintenance level. Items are returned to the user after maintenance is performed at this level.
3. Below depot sustainment. Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "H" appearing in the third position of the SMR code. An "H" appearing in the fourth position of the SMR code indicates complete repair is possible at the below depot sustainment maintenance level. Items are returned to the supply system after maintenance is performed at this level.
4. Depot sustainment. Maintenance accomplished on a component, accessory, assembly, subassembly, plug-in unit, or other portion either on the system or after it is removed. The replace function for this level of maintenance is indicated by the letter "D" or "K" appearing in the third position of the SMR code. Depot sustainment maintenance can be performed by either depot personnel or contractor personnel. A "D" or "K" appearing in the fourth position of the SMR code indicates complete repair is possible at the depot sustainment maintenance level. Items are returned to the supply systems after maintenance is performed at this level.

The tools and test equipment requirements table (immediately following the MAC) lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks table (immediately following the tools and test equipment requirements) contains supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined as follows:

1. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel). This includes scheduled inspection and gaugings and evaluation of cannon tubes.
2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.
3. Service. Operations required periodically to keep an item in proper operating condition, e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms. The following are examples of service functions:

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION - (CONTINUED)

a. Unpack. To remove from packing box for service or when required for the performance of maintenance operations.
b. Repack. To return item to packing box after service and other maintenance operations.
c. Clean. To rid the item of contamination.
d. Touch up. To spot paint scratched or blistered surfaces.
e. Mark. To restore obliterated identification.

4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.
6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments of test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
7. Remove/install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
8. Paint (ammunition only). To prepare and spray color coats of paint so that the ammunition can be identified and protected. The color indicating primary use is applied, preferably, to the entire exterior surface as the background color of the item. Other markings are to be repainted as original so as to retain proper ammunition identification.
9. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and assigned maintenance level is shown as the third position code of the SMR code.
10. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

NOTE

The following definitions are applicable to the “repair” maintenance function:

Services. Inspect, test, service, adjust, align, calibrate, and/or replace.

Fault location/troubleshooting. The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

Disassembly/assembly. The step-by-step breakdown (taking apart) of a spare/functional group coded item, to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

Actions. Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

11. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
12. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

Explanation of Columns in the MAC

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION - (CONTINUED)

Column (1) Group Number. Column (1) lists Functional Group Code (FGC) numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) Component/Assembly. Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions refer to “Maintenance Functions” outlined above.)

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

Field:

C Crew maintenance

F Maintainer maintenance

Sustainment:

L Specialized Repair Activity (SRA)

H Below depot maintenance

D Depot maintenance

NOTE

The “L” maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by work time figure in the “H” column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks, and the SRA complete repair application is explained there.

Column (5) Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement, and Diagnostic Equipment (TMDE), and special tools, special TMDE, and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

Explanation of Columns in the Tools and Test Equipment Requirements

Column (1) Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

Column (3) Nomenclature. Name or identification of the tool or test equipment.

Column (4) National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) Tool Number. The manufacturer's part number.

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION - (CONTINUED)

Explanation of Columns in the Remarks

Column (1) Remarks Code. The code recorded in column (6) of the MAC.

Column (2) Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

END OF WORK PACKAGE

FIELD MAINTENANCE

MAINTENANCE ALLOCATION CHART

Table 1. MAC for ARMY SPACE HEATER H-120, H-120-1

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
00	ARMY SPACE HEATER, 120,000 BTU/HR							A, B, C, D, E, F, G, H
01	EXHAUST PIPE, HOSE, COVERS, DOORS, PANELS AND ELBOW							A
0101	EXHAUST PIPE AND ELBOW	Inspect	0.1					
		Service		0.5			8	F
		Replace		0.5			7	
0102	FLEXIBLE AIR DUCTS	Inspect	0.1					
		Service		0.2				
		Repair		0.5				G
		Replace		0.5				
0103	CONTROL BOX COVER ASSEMBLY	Inspect	0.1					
		Repair		0.5			7, 8	
		Replace		1.0			4, 7, 8	
0104	TOP PANEL ASSEMBLY	Inspect	0.1					
		Repair		0.5			7, 8	
		Replace		1.0			7, 8	
0105	REAR PANEL ASSEMBLY	Inspect	0.1					
		Repair		0.5			7, 8	
		Replace		1.0			4, 7, 8	
010501	ACCESS DOOR	Inspect	0.1					
		Repair		0.5			7, 8	
		Replace		1.0			4, 7, 8	
0106	FRONT SIDE DOOR ASSEMBLY	Inspect	0.1					
		Repair		0.5			7, 8	
		Replace		1.0			7, 8	
0107	REAR SIDE DOOR ASSEMBLY	Inspect	0.1					
		Repair		0.5			7, 8	
		Replace		1.0			7, 8	
0108	DUCT COVER ASSEMBLY	Inspect	0.1					
		Test		0.5				
		Repair		1.0			7	
		Replace		0.5			7	
0109	RETURN/SUPPLY SCREEN	Inspect	0.1					
		Service		0.2				
		Replace		0.2			7	

MAINTENANCE ALLOCATION CHART - (CONTINUED)

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL				(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
			FIELD		SUSTAINMENT			
			CREW	MAINTAINER	BELOW DEPOT	DEPOT		
			C	F	H	D		
02	CONTROL AND COMBUSTION ASSEMBLIES							A
0201	CONTROL ASSEMBLY							A, H
020101	CONTROL BOX ASSEMBLY	Inspect		0.1				
		Repair		1.0			6, 7	
		Replace		2.0			4, 6, 7	
02010101	CONTROL BOX PANEL ASSEMBLY	Inspect		0.1				
		Repair		1.5			7	
		Replace		1.0			7, 8	
0202	FUEL PRESSURE GAUGE	Inspect	0.1					
		Replace		0.5			7	
0203	COMBUSTOR CONTROL RELAY ASSEMBLY	Inspect		0.1				
		Repair		1.5			7, 8	
		Replace		1.0			7, 8	
0204	AIR PRESSURE SWITCH	Inspect		0.1				
		Test		0.2			1	
		Repair		1.5			7	H
		Replace		1.0			1, 7	
03	HOSE, TUBE AND TANK ASSEMBLIES							A
0301	EXTERNAL FUEL CONNECTION AND HOSE	Inspect	0.1					
		Repair		1.0				
		Replace		0.5				
0302	FUEL LINES ASSEMBLIES	Inspect		0.1				B
		Repair		1.0				
		Replace		0.8				
0303	FUEL TANK ASSEMBLY	Inspect		0.1				
		Repair		1.5			7, 8	H
		Replace		1.5			7	
0304	FUEL GAUGE AND FILLER NECK	Inspect	0.1					
		Replace		0.5				
0305	FUEL DRAIN COVER	Inspect		0.1				
		Repair		1.0			7, 8	H
		Replace		0.5			7	
04	CIRCULATING AIR FAN/PUMP/MOTOR ASSEMBLY							A
0401	FAN/PUMP/MOTOR ASSEMBLY	Inspect		0.1				
		Repair		2.0			7	H
		Replace		2.0			7	

MAINTENANCE ALLOCATION CHART - (CONTINUED)

(1)	(2)	(3)	(4) MAINTENANCE LEVEL				(5)	(6)
			FIELD		SUSTAINMENT			
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	CREW C	MAIN-TAINER F	BELOW DEPOT H	DEPOT D	TOOLS AND EQUIPMENT REF CODE	REMARKS CODE
0402	SOLENOID VALVES	Inspect		0.1				
		Repair		2.0			7	H
		Replace		2.0			7	
0403	CIRCULATING AIR MOTOR AND FAN	Inspect		0.1				
		Replace		2.0			7	
0404	FUEL PUMP	Inspect		0.1				
		Repair		2.0			7	H
		Replace		2.0			7	
05	HOSE, FAN AND MOUNT ASSEMBLY							A
0501	COMBUSTION FAN AND MOUNT ASSEMBLY	Inspect		0.1				
		Repair		2.0			7	
		Replace		2.0			7, 8	
06	HEAT EXCHANGER ASSEMBLY	Inspect		0.3				
		Repair		2.5			7	
		Replace		2.0			7	
0601	COVER PLATE	Repair		0.5			7, 8	
		Replace		1.0			7, 8	
0602	THERMOSTAT ASSEMBLY	Inspect		0.1				
		Repair		1.0			7	
		Replace		1.0			7, 8	
0603	TRANSFORMER ASSEMBLY MODEL H-120	Inspect		0.1				
		Repair		1.0			7	C, H
		Replace		1.5			7, 8	
0604	TRANSFORMER ASSEMBLY MODEL H-120-1	Inspect		0.1				
		Repair		1.0			7	C, H
		Replace		1.5			7, 8	
0605	HEAT EXCHANGER MODEL H-120	Inspect		0.5				
		Repair		2.0			7	
		Replace		2.0			7	
0606	HEAT EXCHANGER MODEL H-120-1	Inspect		0.5				
		Repair		2.0			7	
		Replace		2.0			7	
0607	BURNER ASSEMBLY	Inspect		0.5				
		Repair		2.0			7	
		Replace		2.0			7	
07	REMOTE THERMOSTAT ASSEMBLY							A

MAINTENANCE ALLOCATION CHART - (CONTINUED)

(1)	(2)	(3)	(4) MAINTENANCE LEVEL				(5)	(6)
			FIELD		SUSTAINMENT			
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	CREW C	MAIN-TAINER F	BELOW DEPOT H	DEPOT D	TOOLS AND EQUIPMENT REF CODE	REMARKS CODE
0701	REMOTE CONTROL THERMOSTAT	Inspect		0.2				
		Repair		1.0			2, 7, 8	H
		Replace		1.0			2, 7, 8	
0702	REMOTE CONTROL THERMOSTAT CABLE	Inspect		0.2				
		Repair		1.0			2, 7, 8	H
		Replace		0.5			2, 7, 8	
08	POWER CABLE ASSEMBLY	Inspect	0.2					
		Repair		1.0			2, 7, 8	
		Replace		0.5			2, 7, 8	
09	EXTERNAL POWER CABLE ADAPTER CORD	Inspect		0.2				
		Repair		1.0			2, 7, 8	
		Replace		0.5			2, 7, 8	
10	INTERNAL POWER CABLE ADAPTER CORD (J3)	Inspect		0.2				
		Repair		1.0			2, 7, 8	
		Replace		0.5			2, 7, 8	
11	JACK AND WHEEL ASSEMBLIES							A
1101	JACK ASSEMBLY	Inspect	0.1					
		Replace		0.2			7	D
1102	WHEEL ASSEMBLY	Inspect		0.2				
		Service		0.5				F
		Repair		1.0			7	
		Replace		1.0			7	
12	GRILLE AND DAMPER ASSEMBLY							A
1201	DAMPER ASSEMBLY	Repair		2.0			7, 8	
		Replace		2.0			4, 7	
13	EYEBOLT, TIE-DOWN RING, HANDBOOK COMPARTMENT, AND FRAME ASSEMBLY							A
1301	HEAT EXCHANGER BRACE	Inspect		0.1				
		Repair		1.0			2, 3, 4, 5, 7, 8	E
		Replace		1.0			2, 3, 4, 5, 7, 8	
1302	FRAME ASSEMBLY	Inspect		0.2				
		Repair		2.5			5, 7, 8	E
		Replace		4.0			2, 3, 4, 7, 8	

MAINTENANCE ALLOCATION CHART - (CONTINUED)

Table 2. TOOL AND TEST EQUIPMENT

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	F	MULTIMETER	6625-01-265-6000	FLUKE-27II/FM
2	F	RIVETER, BLIND, HAND	5120-00-102-6847	C-845-2528L
3	F	RIVETER, BLIND, HAND	5120-00-177-9839	C-845-1032
4	F	RIVETER, BLIND, HAND	5120-01-289-4310	200 OR EQUIVALENT
5	F	SHOP EQUIPMENT, WELDING	4940-00-357-7268	SC3470-95CLA08
6	F	SHOP SET, ELECTRICAL REPAIR KIT	4910-01-096-4475	13217E8100
7	F	TOOL KIT, GENERAL MECHANIC'S	5180-01-548-7634	PD484
8	F	TOOL SET, SATS (Standard Automotive Tool Set)	4910-01-490-6453	CL-4910-95-A81

Table 3. REMARKS

REMARKS CODE	REMARKS
A	This functional group number is for installation purposes only. Several replacement components and significant components are combined under this function group to ensure no maintenance functions were deleted.
B	This functional group covers the maintenance functions of several tube assemblies.
C	Power transformers are not interchangeable between models.
D	Replace jack assembly on model H-120 with P/N 60225-1.
E	Welding procedures refer to TM 9-237 (Welding Theory and Application).
F	Service is to clean the equipment, reserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.
G	Repair is limited to patching with pressure sensitive tape.
H	Repair is limited to replacing damaged parts.

END OF WORK PACKAGE

FIELD MAINTENANCE

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

INTRODUCTION

Scope

This work package lists COEI and BII for the ASH to help you inventory items for safe and efficient operation of the equipment.

General

The COEI and BII information is divided into the following lists:

Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements. These items are part of the ASH. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Basic Issue Items (BII). These essential items are required to place the ASH in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the ASH during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

Explanation Of Columns In The COEI List And BII List

Column (1) – Illus Number. Gives you the number of the item illustrated.

Column (2) – National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

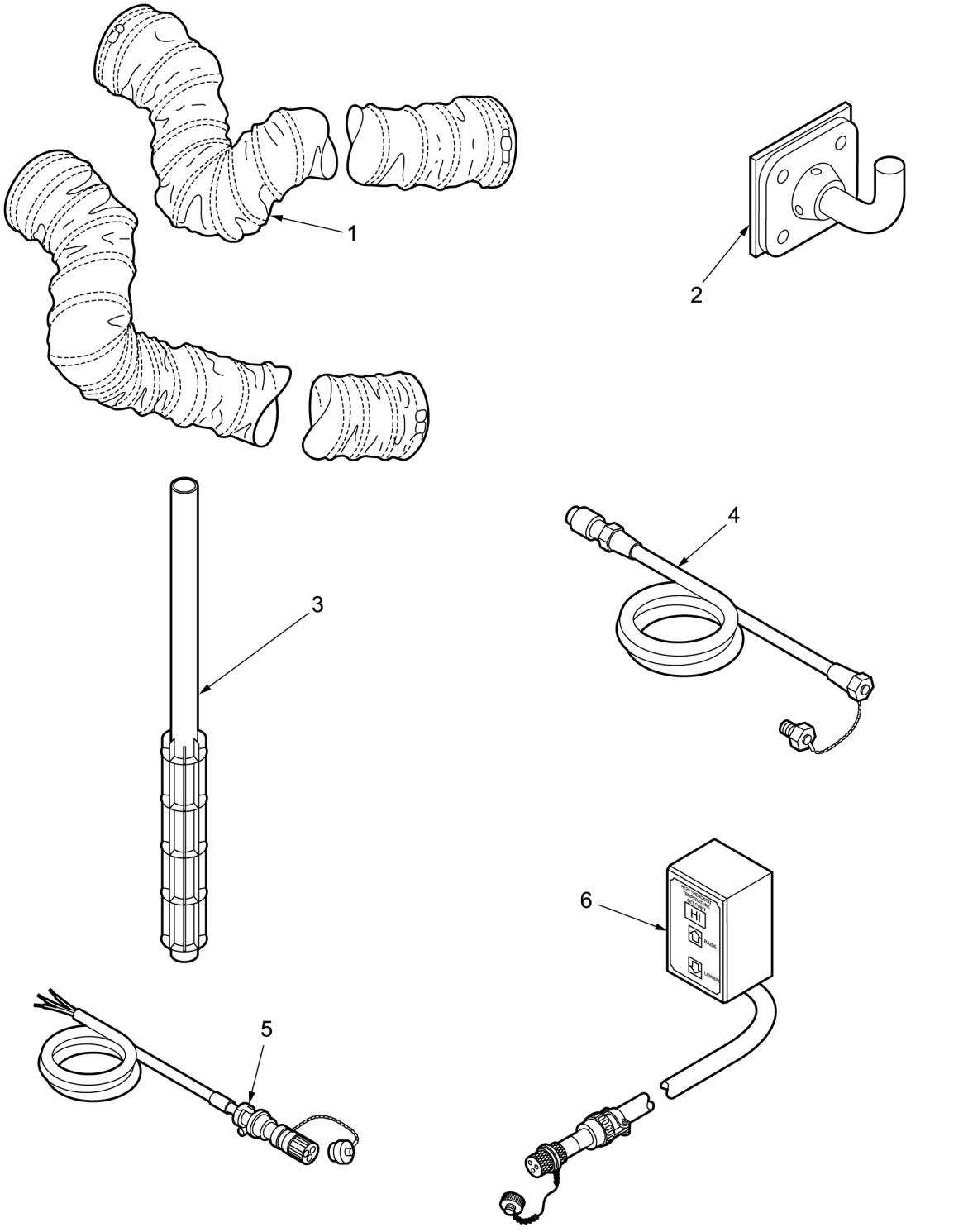
Column (3) – Description, CAGEC, and Part Number. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the CAGEC (commercial and Government entity code) (in parentheses) and the part number.

Column (4) – Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5) – Unit of Measure (U/M). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) – Qty Rqr. Indicates the quantity required.

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS - (CONTINUED)



G06452016480

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS - (CONTINUED)

Table 1. Components of End Item List

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER (NSN)	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1	4720-01-389-9929	Duct, Return/Supply Air: (in shipping container) M38386B2D015 (16632)		EA	2
2	4520-01-398-8361	Exhaust Elbow: (in exhaust pipe storage compartment) 60557-100 (90598)		EA	1
3	4520-01-399-0872	Exhaust Pipe and Guard Assembly: (in exhaust pipe storage compartment) 60561-100 (90598)		EA	1
4		External Fuel Hose: (on floor below side rear door) 60490-100 (Model H-120), 60210-100 (Model H-120-1) (90598 (Models H-120 and H-120-1))		EA	1
5	6150-01-335-3449	External Power Cable Adapter Cord: (on floor below side rear door) 13229E8567 (97403)		EA	1
6		Remote Thermostat Assembly: (on top of circulating air fan) 60410-100 (90598)		EA	1

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS - (CONTINUED)

*TM 9-4520-258-13&P

TECHNICAL MANUAL

OPERATOR AND FIELD MAINTENANCE MANUAL

INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST

FOR

ARMY SPACE HEATER (ASH)
ELECTRIC POWERED, MULTI-FUEL, 120,000 BTI,
MODEL H120
(NSN 4520-01-367-2739)
MODEL H120-1
(NSN 4520-01-439-1682)

This manual supercedes TM 9-4520-258-14, dated 31 August 1994, and TM 9-4520-258-24P, d 1June 2001.

DISTRIBUTION STATEMENT A- Approved for public release, distribution is unrestricted.

HEADQUARTERS, DEPARTMENT OF THE ARMY

G06452017790

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS - (CONTINUED)

Table 2. Basic Issue Items List

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER (NSN)	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1		Technical Manual, Operator and Field Maintenance: (inside front side door) TM 9-4520-258-13&P		EA	1

END OF WORK PACKAGE

FIELD MAINTENANCE

ADDITIONAL AUTHORIZATION LIST

INTRODUCTION

Scope

This work package lists additional items you are authorized for the support of the ASH.

General

This list identifies items that do not have to accompany the ASH and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

Explanation Of Columns In The AAL

Column (1) – National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) – Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (in parentheses) and the part number.

Column (3) – Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (4) – Unit of Measure (U/M). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) – Qty Recm. Indicates the quantity recommended.

Table 1. ADDITIONAL AUTHORIZED ITEMS

(1) NATIONAL STOCK NUMBER (NSN)	(2) DESCRIPTION, PART NUMBER/(CAGEC)	(3) USABLE ON CODE	(4) U/I	(5) QTY RECM
5120-00-237-6985	Screwdriver, Flat Tip: 3/8 in w/tip; 8 in lg Blade; Plastic Handle 11655777-10 (19207)		EA	

END OF WORK PACKAGE

FIELD MAINTENANCE

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Scope

This work package lists expendable and durable items that you will need to operate and maintain the ASH. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), CTA 50-909, Field and Garrison Furnishings and Equipment or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanation Of Columns In The Expendable/Durable Items List

Column (1) Item No. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use brake fluid (WP 0126, item 5)).

Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item.

Column (3) National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, Part Number/(CAGEC). This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (5) U/I. Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc."

Table 1. Expendable and Durable Items List

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER AND (CAGEC)	(5) U/I
1	F	8040-00-550-8835	Adhesive MIL-A-24179A (81349)	GL
2	F	8030-00-059-2761	Anti-Seize Compound MIL-A-907E (81349)	CN
3	F	7930-00-068-1669	Detergent, General Purpose	BX
4	F	6850-00-281-1985	Dry Cleaning Solvent, PD 680, 1 gl	BX
5	F	8415-01-415-6956	Gloves, Heat Protective, 1 pair (1S655)	PG
6	F	9150-00-935-4017	Grease, Aircraft and Instrument, Cartridge MIL-G-23827	CA
7	F		Loctite 609, 3 oz tube (05972)	TU
8	F	9150-00-185-0629	Lubricating Oil, General Purpose VV-L-800 (81349)	CN
9	F	8030-01-388-5604	Primer, Sealing Compound, 1 bt MIL-S-22473D (81349)	BT
10	F	8030-01-388-5606	Primer, Sealing Compound, Loctite Primer 7649 (05972)	CN
11	F	7920-00-205-1711	Rag, Wiping A-A-531 (64076)	BE
12	F		Sealing Compound, 3 oz tube SIKAFLX-221 (OPMNO)	TU
13	F	8030-01-051-3373	Sealing Compound, 3 oz tube 51031 (05972)	TU
14	F	5975-00-451-5001	Strap, Tie-down, Electrical Component MS3367	FY

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST - (CONTINUED)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER AND (CAGEC)	(5) U/I
15	F	9905-00-537-8954	Tag, Marker (81349)	BD
16	F	7150-00-778-6383	Tape, Pressure Sensitive, Adhesive 471 GREEN 3 IN (52152)	RO

END OF WORK PACKAGE

OPERATOR INSTRUCTIONS

TOOL IDENTIFICATION LIST

TOOL IDENTIFICATION LIST

INTRODUCTION

Scope

This work package lists all common tools and supplements and special tools/fixtures needed to maintain the Army Space Heater (ASH).

Explanation Of Columns

Column (1) Item No. This number is assigned to the entry in the list and is referenced in the initial setup to identify the item (e.g., Extractor (WP 0090, item 32)).

Column (2) Item Name. This column lists the item by noun nomenclature and other descriptive features (e.g., Gauge, belt tension).

Column (3) National Stock Number (NSN). This is the National Stock Number (NSN) assigned to the item; use it to requisition the item.

Column (4) Part Number/(CAGEC). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. The manufacturer's Commercial and Government Entity Code (CAGEC) is also included.

Column (5) Reference. This column identifies the authorizing supply catalog or RPSTL for items listed in this work package.

Table 1. Tool Identification List

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER (NSN)	(4) PART NUMBER/ (CAGEC)	(5) REFERENCE
1	Bit Set (Tool Set, SATS)		KTCS0194 (00NS2)	CL 4910-95-A81
2	Brush, Medium Bristle (Tool Set, SATS)		KTCS0145 (00NS2)	CL 4910-95-A81
3	Drain Pan (Tool Set, SATS)		KTCS0225 (00NS2)	CL 4910-95-A81
4	Drill (Tool Set, SATS)		KTC0188 (00NS2)	CL 4910-95-A81
5	Face Shield (Tool Set, SATS)		KTCS0199 (00NS2)	CL 4910-95-A81
6	Fire Extinguisher (Tool Set, SATS)		KTCS0196 (00NS2)	CL 4910-95-A81
7	Gasket Punch (Tool Set, SATS)		KTCS0196 (00NS2)	CL 4910-95-A81
8	Multimeter	6625-01-285-6000	FLUKE-27II/FM (89536)	CL 4910-95-A81
9	Offset Phillips Screwdriver		KTC0329 (00NS2)	CL 4910-95-A81
10	Riveter, Blind, Hand	5120-00-102-6847	C-845-2528L (0VK23)	FEDLOG
11	Riveter, Blind, Hand	5120-00-177-9839	C-845-1032 (0VK23)	FEDLOG

TOOL IDENTIFICATION LIST - (CONTINUED)

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER (NSN)	(4) PART NUMBER/ (CAGEC)	(5) REFERENCE
12	Riveter, Blind, Hand	5120-01-289-4310	5120-01-289-4310 (80244)	FEDLOG
13	Shears (Tool Set, SATS)		KTCS0348 (00NS2)	CL 4910-95-A81
14	Shop Equipment, Welding	4940-00-357-7268	SC3470-95–CLA08 (19204)	CL 4940-95-B19
15	Shop Set, Electrical Repair Kit	4910-00-096-4475	13217E8100 (19204)	TM 9-4940-546-14&P
16	Soft-Faced Vise (Tool Set, SATS)		KTCS0725 (00NS2)	CL 4910-95-A81
17	Soldering Gun	3439-00-542-0396	8200G3 (96508)	CL 4910-95-B05
18	Soldering Iron	3439-00-964-0090	AA59284-IA200 (58536)	CL 4940-95-B05
19	Toolkit, General Mechanics (GMTK)	5180-01-548-7634	PD484 (19200)	CL 5180-95-B48

END OF WORK PACKAGE

FIELD MAINTENANCE

MANDATORY REPLACEMENT PARTS LIST

MANDATORY REPLACEMENT PARTS LIST

This work package includes a list of all mandatory replacement parts referenced in the task initial setups and procedures. These are items that must be replaced during maintenance whether they have failed or not. This includes items based on usage intervals such as miles, time, rounds fired, etc.

Table 1. Mandatory Replacement Parts

ITEM NO.	PART NUMBER/ CAGEC	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
1	ABUP4 07707	5310-01-398-9656	Backup Plate	10
2	MS24665-142 80205	5315-00-187-9528	Cotter Pin	1
3	MS24665-372 80205	5315-00-059-0491	Cotter Pin	2
4	MS24665-389 80205	5315-00-187-9384	Cotter Pin	2
5	60717-1 90598	5330-01-398-9728	Gasket	1
6	60499-1 90598		Gasket, Fuel Drain Cover	1
7	1752036 90005	5330-01-398-9732	Gasket, Fuel Filter	1
8	60824-1 5RQL2	5330-01-545-4144	Gasket, Hourmeter	1
9	WCSM-19/6-1200-S		Heat Shrink Tubing	1
10	MS35333-37 80205	5310-00-579-0079	Lockwasher	1
11	9B7233 11083	5310-00-559-0070	Lockwasher	8
12	MS35333-39 11083	5310-00-576-5752	Lockwasher	1
13	MS35333-40 80205	5310-00-550-1130	Lockwasher	1
14	MS35333-42 80205	5310-00-595-7237	Lockwasher	1
15	MS35338-25 D5589	5310-00-012-1637	Lockwasher	1
16	MS35338-42 80205	5310-00-045-3299	Lockwasher	1
17	MS35338-43 80205	5310-00-045-3296	Lockwasher	1
18	MS35338-44 80205	5310-00-582-5965	Lockwasher	10
19	MS35338-45 80205	5310-00-407-9566	Lockwasher	1
20	MS35338-46 80205	5310-00-004-5033	Lockwasher	1
21	MS35338-138 D9182	5310-00-224-0749	Lockwasher	58
22	0-1290/056762		O-Ring	2

MANDATORY REPLACEMENT PARTS LIST - (CONTINUED)

ITEM NO.	PART NUMBER/ CAGEC	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
23	239 90598	5331-01-329-9654	O-Ring	1
24	AS568-035 81343	5331-01-058-7109	O-Ring	1
25	MS29513-012 81343	5331-00-248-3836	O-Ring	1
26	MS29513-014 96906	5331-00-248-3840	O-Ring	1
27	AS9955-023 81343	5331-01-398-4995	O-Ring	1
28	MS9955-107 81343	5331-01-398-4993	O-Ring	2
29	AD42AH 06888	5320-01-110-7954	Rivet, Blind	65
30	AD43AH 07707	5320-00-343-5435	Rivet, Blind	5
31	M24243/1-B606 81349	5320-00-409-6841	Rivet, Blind	1
32	AD64AH K0017	5320-00-140-4965	Rivet, Blind	9
33	AD62BS 07707	5320-00-850-3266	Rivet, Blind	1
34	AD64BS 54402	5320-00-966-2386	Rivet, Blind	1
35	M2424316A403H 81349	5320-00-882-8388	Rivet, Blind	6
36	10640709-1 18876	5320-00-956-7362	Rivet, Blind	9
37	AD64H 07707	5320-00-956-7355	Rivet, Blind	9
38	AK43H 07707	5320-00-143-6149	Rivet, Blind	1
39	M24243 / 1-F402 81349	5320-01-579-4618	Rivet, Blind	1
40	M24243 / 602F 81349	5320-01-579-4618	Rivet, Blind	1
41	SD43BS 07707	5320-00-971-7870	Rivet, Blind	1
42	A10KB116 03481	5310-00-021-7088	Rivnut	1
43	A25KB151 03481	5310-00-620-4421	Rivnut	1
44	A31KB125 03481	5310-01-545-7419	Rivnut	4
45	M7928 / 6-4 81343	5940-01-232-8636	Terminal Splice, Crimp Style	1

END OF WORK PACKAGE

INDEX

Subject	WP Sequence No.–Page No.
A	
Acronyms and Abbreviations	WP 0001–2
Additional Authorization List	WP 0115–2
Administrative Storage	WP 0079–2
Air Ducts, Flexible	
Repair	WP 0050–1
Replacement	WP 0017–1
Servicing	WP 0050–1
Air Pressure Switch	
Adjustment	WP 0059–4
Repair	WP 0059–1
Replacement	WP 0028–1
Testing	WP 0059–1
Airflow System	WP 0003–6
Army Maintenance System MAC	WP 0113–1
Assembly and Preparation for Use	WP 0005–2
Auto Heating Mode, Operating In	WP 0005–7
B	
Basic Issue Items (BII) List	WP 0116–3
Burner Assembly	
Assembly	WP 0072–6
Disassembly	WP 0072–4
Inspection	WP 0072–3
Repair	WP 0072–1
Replacement	WP 0042–1
C	
Circulating Air Fan/Pump/Motor Assembly	
Repair	WP 0064–1
Replacement	WP 0034–1
Circulating Air Motor and Fan	
Replacement	WP 0033–1
Combustion Fan and Mount Assembly	
Assembly	WP 0065–5
Disassembly	WP 0065–4
Inspection	WP 0065–5
Repair	WP 0065–1
Replacement	WP 0035–1
Combustor Control Relay Assembly	
Assembly	WP 0058–4
Disassembly	WP 0058–3
Repair	WP 0058–1
Replacement	WP 0027–1
Common Tools and Equipment	WP 0001–3
Component of End Items List	WP 0116–3
Components of End Item (COEI) and Basic Issue Items (BII) Lists	WP 0114–3
Connection, Power	WP 0005–5
Control Box Assembly	
Assembly	WP 0057–4
Disassembly	WP 0057–2
Inspection	WP 0057–1
Repair	WP 0057–1
Replacement	WP 0025–1

INDEX – (Continued)

Subject	WP Sequence No.–Page No.
Control Box Cover Assembly	
Assembly	WP 0051–1
Disassembly	WP 0051–1
Repair	WP 0051–1
Replacement	WP 0018–1
Control Box Panel Assembly	
Assembly	
Flameout, High-Temp, and Power Lights	WP 0056–10
Mode Switch and Hourmeter	WP 0056–13
Purge and Flame Reset Switches	WP 0056–11
Terminal Boards/Transformer	WP 0056–6
Thermostat and Power Circuit Breakers	WP 0056–12
Disassembly	
Flameout, High Temp, and Power Lights	WP 0056–4
Mode Switch and Hourmeter	WP 0056–1
Purge and Flame Reset Switches	WP 0056–3
Thermostat and Power Circuit Breakers	WP 0056–2
Transformer/Terminal Boards	WP 0056–5
Repair	WP 0056–1
Replacement	WP 0024–1
Controls and Indicators, Operator	WP 0004–1
Corrosion Prevention and Control (CPC)	WP 0001–1
Cross-Reference List, Nomenclature	WP 0001–2

D

Damper Assembly	
Assembly	WP 0077–3
Disassembly	WP 0077–2
Repair	WP 0077–1
Replacement	WP 0048–1
Decal and Data Plate Guide, Stowage and	WP 0008–1
Description and Use of Operator Controls and Indicators	WP 0004–1
Destruction of Army Materiel to Prevent Enemy Use	WP 0001–1
Dimensions, Components and Weights	WP 0002–10
Door Assemblies, Front and Rear Side	
Repair	WP 0054–1
Replacement	WP 0021–1
Assembly	
Front Side	WP 0054–2
Rear Side	WP 0054–5
Disassembly	
Front Side	WP 0054–2
Rear Side	WP 0054–4
Duct Cover Assembly	
Inspection	WP 0055–1
Repair	WP 0055–1
Replacement	WP 0022–1

E

Electrical System	WP 0003–1
Emergency Procedures Under Unusual Conditions	WP 0007–1
Equipment	
Characteristics, Capabilities and Features	WP 0002–1
Specification Data	WP 0002–9

INDEX – (Continued)

Subject	WP Sequence No.–Page No.
Equipment Data	
Components, Dimensions, and Weights	WP 0002–9
Fuel Types	WP 0002–10
Fuel Pressure Settings	WP 0002–10
Exhaust Pipe	
Inspection	WP 0016–1
Service	WP 0016–1
Replacement	WP 0016–1
Expendable/Durable Supplies and Materials List	WP 0116–1
External Power Cable Adapter Cord	
Repair	WP 0075–1
Replacement	WP 0045–1
Extreme Cold, Operating In	WP 0006–1
Extreme Heat, Operating In	WP 0006–1
F	
Flexible Air Ducts	
Repair	WP 0050–1
Replacement	WP 0017–1
Service	WP 0050–1
Frame Assembly	
Inspection	WP 0078–10
Installation of Rivnuts and Receptacles	WP 0078–15
Installation of Insulation	WP 0078–16
Removal of Insulation	WP 0078–8
Removal of Rivnuts and Receptacles	WP 0078–7
Repair	WP 0078–1
Replacement	WP 0049–1
Assembly	
Fuel Drain Ring/Cover & Electrical Power Lead-In	WP 0078–13
Heat Exchanger Brace & Grommet	WP 0078–14
Informational Plates	WP 0078–10
Internal Power Cable Adapter Cord (J3)	WP 0078–10
Lift/Tie-Down Rings	WP 0078–10
Wheel Pivots	WP 0078–15
Disassembly	
Fuel Drain Ring/Cover & Electrical Power Lead-In	WP 0078–4
Heat Exchanger Brace & Grommet	WP 0078–5
Informational Plates	WP 0078–1
Internal Power Cable Adapter Cord (J3)	WP 0078–2
Lift/Tie-Down Rings	WP 0078–2
Wheel Pivots	WP 0078–7
Front and Rear Side Door Assemblies	
Repair	WP 0054–1
Replacement	WP 0021–1
Assembly	
Front Side	WP 0054–2
Rear Side	WP 0054–5
Disassembly	
Front Side	WP 0054–2
Rear Side	WP 0054–4
Fuel, Types of	WP 0002–10
Fuel Gauge	
Location and Description	WP 0002–4

INDEX – (Continued)

Subject	WP Sequence No.–Page No.
Fuel Pressure Gauge	
Replacement	WP 0026–1
Fuel Pump and Solenoid Valves	
Adjustment	WP 0063–9
Assembly	WP 0063–6
Disassembly	WP 0063–4
Repair	WP 0063–1
Replacement	WP 0032–1
Fuel Spills, Emergency Procedures	WP 0007–1
Fuel System	WP 0003–4
Fuel Tank Assembly	
Assembly	WP 0062–6
Disassembly	WP 0062–4
Repair	WP 0062–1
Replacement	WP 0031–1
Fuel Tank Selection	WP 0005–3
Fueling	WP 0005–4
G	
General Information	WP 0001–1
H	
Heat Exchanger Assembly	
Cover Plate and Gasket Removal	WP 0066–2
Flame Sensor Installation	WP 0066–8
Flame Sensor Removal	WP 0066–2
Fuel Line and Sight Glass Installation	WP 0066–8
Fuel Line and Sight Glass Removal	WP 0066–2
Repair	WP 0066–1
Replacement	WP 0036–1
Heat Exchanger (Model H-120)	
Assembly	WP 0067–10
Disassembly	WP 0067–7
Inspection	WP 0067–9
Repair	WP 0067–1
Replacement	WP 0037–1
Heat Exchanger (Model H-120-1)	
Assembly	WP 0068–10
Disassembly	WP 0068–7
Inspection	WP 0068–9
Repair	WP 0068–1
Replacement	WP 0038–1
I	
Illustrated List of Manufactured Items Introduction	WP 0081–1
Illustrated List of Manufactured Items — Cables	WP 0083–1
Illustrated List of Manufactured Items — Chain, Damper	WP 0082–1
Illustrated List of Manufactured Items — Gaskets	WP 0084–1
Illustrated List of Manufactured Items — Grommet, Exhaust Pipe Stowage	WP 0085–1
Illustrated List of Manufactured Items — Hinges	WP 0086–1
Illustrated List of Manufactured Items — Hose, Combustion Air Fan	WP 0087–1
Illustrated List of Manufactured Items — Insulations	WP 0088–1
Illustrated List of Manufactured Items — Tube Assemblies	WP 0090–1

INDEX – (Continued)

Subject	WP Sequence No.–Page No.
Illustrated List of Manufactured Items — Tubes (Non-Metallic)	WP 0089–1
Illustrated List of Manufactured Items — Wires	WP 0091–1
Installation Instructions (Assembly of Equipment)	WP 0015–4
Internal Power Cable Adapter Cord (J3)	
Repair	WP 0075–1
Replacement	WP 0045–1
J	
Jack Assembly	
Replacement	WP 0046–1
K	
L	
Leakage Definitions	WP 0012–2
Location and Description of Major Components	WP 0002–1
Lubrication Instructions	WP 0080–1
M	
Maintenance Allocation Chart	
Army Maintenance System MAC, The	WP 0112–1
Explanation of Columns in the MAC	WP 0112–3
Explanation of Columns in the Remarks	WP 0112–4
Explanation of Columns in the Tools and Test Equipment Requirements	WP 0112–3
Introduction	WP 0112–1
Maintenance Functions	WP 0112–1
Maintenance Allocation Chart	WP 0113–1
Maintenance Forms, Records and Reports	WP 0001–2
Major Components, Location and Description of	WP 0002–1
Mandatory Replacement Parts List	WP 0118–1
Manual Heating Mode, Operating In	WP 0005–10
Manufactured Items, Illustrated List of	
Introduction	WP 0081–1
Part Number Index	WP 0081–1
Manufactured Items, Illustrations of	WP –1
Movement, Preparation for	WP 0079–1
N	
National Stock Number Index	WP 0097–1
Nomenclature Cross-Reference List	WP 0001–3
Nuclear, Biological, and Chemical (NBC) Decontamination Procedures	WP 0007–1
O	
Operating In	
Auto Heating Mode	WP 0005–7
Manual Heating Mode	WP 0005–10
Ventilation Mode	WP 0005–6
Operating Procedures (Under Usual Conditions)	WP 0005–6
Operation	
Under Unusual Conditions and Environments	WP 0006–1
Under Usual Conditions	WP 0005–1
Operator PMCS	WP 0013–1

INDEX – (Continued)

Subject	WP Sequence No.–Page No.
P	
Part Number Index	WP 0098–1
PMCS Procedures	
Field Maintenance	WP 0014–1
Introduction	WP 0012–1
Operator Instructions	WP 0013–1
Power Cable Adapter Cord, External	
Repair	WP 0075–1
Replacement	WP 0045–1
Power Cable Adapter Cord, Internal (J3)	
Repair	WP 0075–1
Replacement	WP 0045–1
Power Cable Assembly	
Inspection	WP 0074–3
Repair	WP 0074–1
Replacement	WP 0044–1
Power Connection	WP 0005–5
Preparation for Movement	WP 0079–1
Preparation for Storage or Shipment	WP 0079–1
Preventive Maintenance Checks and Services (PMCS)	
Field Maintenance	WP 0014–1
Introduction	WP 0012–1
Operator	WP 0013–1
Procedures, Operating	WP 0005–6
Q	
Quality of Material	WP 0001–3
R	
Rear Panel Assembly	
Assembly	WP 0053–8
Disassembly	WP 0053–3
Repair	WP 0053–1
Replacement	WP 0020–1
References	WP 0111–1
Remote Control Thermostat	
Assembly	WP 0073–4
Disassembly	WP 0073–1
Inspection	WP 0073–2
Repair	WP 0073–1
Replacement	WP 0043–1
Repair Parts and Special Tools List (RPSTL)	
Explanation of Columns	WP 0094–1
Explanation of Cross-Reference Indexes Work Packages Format and Columns	WP 0094–4
How to Locate Repair Parts	WP 0094–5
Introduction	WP 0094–1
Repair Parts and Special Tools List	WP 0095–1
Special Information (UOC)	WP 0094–5
Reporting Equipment Improvement Recommendations (EIR)	WP 0001–1
Return/Supply Screen	
Inspection	WP 0023–1
Replacement	WP 0023–1

INDEX – (Continued)

Subject	WP Sequence No.–Page No.
Service	WP 0023–1

S

Safety, Care, and Handling	WP 0001–3
Sandy or Dusty Conditions, Operating In	WP 0006–1
Security Procedures	WP 0079–1
Service Upon Receipt of Materiel	WP 0015–1
Shutdown	WP 0005–13
Sight Glass	WP 0002–4
Site Requirements	WP 0015–1
Storage or Shipment, Preparation for	WP 0079–1
Stowage and Decal and Data Plate Guide	WP 0008–1

T

Theory of Operation	
Airflow System	WP 0003–6
Electrical System	WP 0003–1
Fuel System	WP 0003–4
Thermostat Assembly	
Assembly	WP 0069–4
Disassembly	WP 0069–2
Repair	WP 0069–1
Replacement	WP 0039–1
Tool and Test Equipment Requirements	WP 0113–5
Tool Identification List	WP 0117–5
Top Panel Assembly	
Assembly	WP 0052–2
Disassembly	WP 0052–1
Repair	WP 0052–1
Replacement	WP 0019–1
Torque Limits	WP 0092–1
Transformer Assembly (Model H-120)	
Repair	WP 0070–1
Replacement	WP 0040–1
Transformer Assembly (Model H-120-1)	
Repair	WP 0071–1
Replacement	WP 0041–1
Troubleshooting	
Field Maintenance	
ASH Will Not Start	WP 0011–3
ASH Flames Out Repeatedly	WP 0011–12
Combustion Fan Does Not Operate	WP 0011–7
Combustion Fan Does Not Operate (Black Exhaust Smoke and Loud Rumble)	WP 0011–27
Excessive Black Smoke in Exhaust	WP 0011–20
Fan Motor Slows Down, Indicator Lights Dim	WP 0011–21
Fuel Pressure Stays at 25 PSI or Less in Heat Auto or Heat Manual Modes	WP 0011–10
Improper/No Spark in Igniter	WP 0011–22
Low Fuel Pressure Indicated	WP 0011–18
No Combustion in Heat Auto Mode	WP 0011–30
No Combustion in Heat Manual Mode	WP 0011–36
No Fuel Pressure Indicated	WP 0011–15
Unit Backfires or Rumbles in Heat Auto and/or Heat Manual Modes	WP 0011–26
Operator	
ASH Flames Out Repeatedly	WP 0010–5

INDEX - (Continued)

Subject	WP Sequence No.–Page No.
ASH Will Not Start	WP 0010–2
Combustion Fan Does Not Operate	WP 0010–3
Excess Black Smoke in Exhaust	WP 0010–9
Fan Motor Slows Down or Indicator Lights Dim	WP 0010–10
Fuel Pressure Stays at 25 PSI or Less in Heat Auto or Heat Manual Modes	WP 0010–4
No Combustion in Heat Auto Mode	WP 0010–6
U	
Unusual Conditions, Operating Under	WP 0006–1
Usual Conditions, Operating Under	WP 0005–1
V	
Ventilation Mode, Operating In	WP 0005–6
W	
Warranty Information	WP 0001–2
Wheel Assembly	
Repair	WP 0076–1
Replacement	WP 0047–1
Wire List	WP 0093–1
Wiring Diagrams	WP 0093–4

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@avma27.army.mil>
To: TACOMLCMC.DAForm2028@us.army.mil

Subject: DA Form 2028

1. From: Joe Smith
2. Unit: home
3. Address: 4300 Park
4. City: Hometown
5. St: MO
6. Zip: 77777
7. Date Sent: 19-OCT-93
8. Pub no: 55-2840-229-23
9. Pub Title: TM
10. Publication Date: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. Submitter FName: Joe
14. Submitter MName: T
15. Submitter LName: Smith
16. Submitter Phone: 123-123-1234
17. Problem: 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. Text:

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is ODISC4.

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE
21 October 2003

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*
U.S. Army TACOM Life Cycle Management Command,
ATTN: AMSTA-LCL-MPP / TECH PUBS
6501 E. 11 Mile Road, Warren, MI 48397-5000

FROM: *(Activity and location) (Include ZIP Code)*
PFC JANE DOE
Co A 3RD Engineer Br.
Ft Leonard Wood, MO 63108

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 10-1670-296-20&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*
	0036 00-2				1	*In Table 1, Sewing Machine Code Symbols, the second sewing machine code symbol should be MDZZ not MD22* *Change the manual to show Sewing Machine, Industrial: Zig-Zag; 308 stitch; medium-duty; NSN 3530-01-181-1421 as a MDZZ code symbol.*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Jane Doe, PFC	(508) 233-4141 DSN 256-4141	Jane Doe *Jane Doe*

DA FORM 2028, FEB 74 REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED. USAPPC V3.00

SAMPLE

TO: (*Forward direct to addressee listed in publication*)	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	*PFC JANE DOE* *Co A 3RD Engineer Br.* *Ft Leonard Wood, MO 63108*	21 October 2003

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 10-1670-296-20&P	30 October 2002	Unit Manual for Ancillary Equipment for Low Velocity Air Drop Systems

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
0066 00-					4			*Callout 16 in figure 4 is pointed to a D-Ring.In the Repair Part List key for Figure 4, item 16 is called a Snap Hook. Please correct one or the other.*

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

SAMPLE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	FROM: *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-4520-258-13&P	1 November 2013	Field Maintenance Manual Including Repair Parts and Special Tools List for Army Space Heater (ASH) Electric Powered, Multi-Fuel, 120,000 BTU Model H-120 and Model H-120-1

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*	FROM: (*Activity and location) (Include ZIP Code)*	DATE
U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-4520-258-13&P	1 November 2013	Field Maintenance Manual Including Repair Parts and Special Tools List for Army Space Heater (ASH) Electric Powered, Multi-Fuel, 120,000 BTU Model H-120 and Model H-120-1

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	FROM: *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-4520-258-13&P	1 November 2013	Field Maintenance Manual Including Repair Parts and Special Tools List for Army Space Heater (ASH) Electric Powered, Multi-Fuel, 120,000 BTU Model H-120 and Model H-120-1

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*	FROM: (*Activity and location) (Include ZIP Code)*	DATE
U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-4520-258-13&P	1 November 2013	Field Maintenance Manual Including Repair Parts and Special Tools List for Army Space Heater (ASH) Electric Powered, Multi-Fuel, 120,000 BTU Model H-120 and Model H-120-1

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	FROM: *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-4520-258-13&P	1 November 2013	Field Maintenance Manual Including Repair Parts and Special Tools List for Army Space Heater (ASH) Electric Powered, Multi-Fuel, 120,000 BTU Model H-120 and Model H-120-1

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: *(Forward to proponent of publication or form) (Include ZIP Code)*	FROM: (*Activity and location) (Include ZIP Code)*	DATE
U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-4520-258-13&P	1 November 2013	Field Maintenance Manual Including Repair Parts and Special Tools List for Army Space Heater (ASH) Electric Powered, Multi-Fuel, 120,000 BTU Model H-120 and Model H-120-1

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

By Order of the Secretary of the Army:

RAYMOND T. ODIERNO
General, United States Army
Chief of Staff

Official:

GERALD B. O'KEEFE
Administrative Assistant to the
Secretary of the Army
1314211

DISTRIBUTION:

Initially published in electronic media only. When funds become available, this publication will be distributed in accordance with the initial distribution number (IDN) 258000, requirements for TM 9-4520-258-13&P.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 3 2.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Weights

1 centigram = 10 milligrams = .15 grain
1 decigrarn = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagrarn = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .15 5 sq. inch
1 sq. decimeter =100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	Iiters	.473	milliliters	fluid ounces	.034
quarts	Iiters	.946	liters	pints	2.113
gallons	Iiters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 087438-000